AlexRenew

Bid Set

Specifications

Legals, Divisions 01-02
Volume 1 of 3

Centrate Pretreatment Project

Contract 25-007

January 2025

Prepared by:

Jacobs

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PART 1

PROCUREMENT REQUIREMENTS

SECTION 00 11 10
INVITATION TO BID

GENERAL NOTICE

AlexRenew (Owner) is requesting Bids for the construction of the following Construction Project (Project):

CENTRATE PRETREATMENT PROJECT
CONTRACT NO. 25-007

Bids shall be received and time stamped online through the eVA website no later than Tuesday, February 25, 2025, at 2:00 p.m. local time. A tabulation will be publicly posted following the bid closing.

The Project includes the following Work:

The Centrate Pretreatment Project will upgrade the CPT system to simplify the system operability and maintenance. The scope of work includes, but is not limited to demolishing selected equipment, replacement of existing equipment with wall-mounted baffles, aeration panel diffusers, positive displacement blowers, decanters, submersible pumps, external fed wedge wire screens, and Anammox retention screens. Other work includes expansion of a mezzanine area, HVAC relocations, and demonstration and commissioning of the new CPT system.

POINT OF CONTACT

The Point of Contact for all matters is:

Igor Scherbakov, Procurement Manager
AlexRenew
Email: CPT-25-007@alexrenew.com

OBTAINING THE BIDDING DOCUMENTS

Electronic copies of Bidding Documents for the Project can be found at AlexRenew website https://alexrenew.com/procurement and the Commonwealth of Virginia website https://mvendor.cgieva.com/Vendor/public/AllOpportunities.

All official notifications will be offered through the AlexRenew website. The Owner is not responsible for Bidding Documents, including addenda, if any, obtained from sources other than the AlexRenew website.

PRE-BID CONFERENCE

A mandatory pre-bid conference for the Project will be held on January 28, 2025, from 10:00 a.m. to 11:00 a.m. local time at AlexRenew, 1800 Limerick Street, Alexandria, VA 22314, Conference Room EC600. Attendance at the pre-bid conference is required. The pre-bid conference will be followed by an on-site inspection of Building 69. Bidders must report to the address above for registration a minimum of 30 minutes prior to the time set for the pre-bid conference and on-site

inspection. Directions to the appropriate meeting room will be given at that time. Representatives of the Owner and Engineer will be present to discuss the project.

Any prospective bidder requiring "reasonable accommodation" under the Americans with Disabilities Act, must contact the designated Point of Contact by telephone no later than 2:00 PM local time on January 24, 2025.

QUESTIONS AND ADDENDA

All questions regarding the meaning or intent of the Bidding Documents are to be directed to the designated Point of Contact. All questions must be received by 2:00 p.m. local time on February 11, 2025. Any questions received after this date may not be answered.

Changes to the Bidding Documents, if any, will be in the form of formal Addenda that will be posted on the AlexRenew website. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

INSTRUCTIONS TO BIDDERS

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

END OF SECTION

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This solicitation was issued using the Competitive Sealed Bidding with Prequalification as defined and authorized in the Virginia Public Procurement Act (VPPA) § 2.2-4302.1 and § 2.2-4317. The Contract(s) resulting from this solicitation shall be subject to the terms and conditions as set forth herein, or elsewhere in the Owner's Procurement Manual and other applicable Laws and Regulations.

Only Bids from Applicants that have been prequalified by Invitation to Apply for Prequalification (IPQ) 25-007 will be accepted in response to this Invitation to Bid. Bids received from those who have not been prequalified will not be considered.

However, within those limitations, is the Owner's intent that this Invitation to Bid (ITB) permits maximum practicable competition. It shall be the Bidder's responsibility to advise the Procurement Manager in writing if any language, requirement, specification, etc., or any combination thereof, inadvertently restricts or limits the requirements stated in this ITB to a single source. Such notification must be received by Procurement Manager no later than fifteen (15) days prior to the date set for acceptance of Bids.

ARTICLE 1- DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office*: AlexRenew, 1800 Limerick Street, Alexandria, VA 22314

B. *Owner's Website*: https://alexrenew.com/procurement

ARTICLE 2- BIDS RECEIVED

2.01 Bids will be received until the date and time specified in the Invitation to Bid.

ARTICLE 3- COPIES OF BIDDING DOCUMENTS

3.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents) from the Owner's Website. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents, by Bidder itself or by its prospective Subcontractors and Suppliers.

3.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use.

3.03 All Addenda issued by the Owner will be available through the Owner's Website.

ARTICLE 4- PRE-BID CONFERENCE

4.01 A mandatory pre-bid conference will be held at the time and location indicated in the Invitation to Bid. Representatives of Owner and Engineer will be present to discuss the Project.

4.02 Questions received at the pre-bid conference may be answered verbally. However, oral statements may not be relied upon and will not be binding or legally effective.

4.03 Bidder's representative attendance of the pre-bid conference is mandatory in order for the bidder to be considered responsive.

ARTICLE 5- INTERPRETATIONS AND ADDENDA

5.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

5.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to the Owner in writing via an email to the Procurement Manager. For a question to be considered, the subject line of the email must state the following: "ITB No. 25-007 Questions". Questions should be succinct and must include the submitter's name, title, company name, company address, and telephone number.

A. Contact information for the Procurement Manager is as follows: CPT-25-007@alexrenew.com

B. Prior to the award of a contract resulting from this solicitation, bidders are prohibited from contacting AlexRenew staff other than the Procurement Manager.

5.03 Questions received by the Procurement Manager after than the date specified in the Invitation to Bid may not be answered.

5.04 Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda delivered through the Owner's Website as indicated in the Advertisement or ITB.

5.05 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 6- BID SECURITY

6.01 A Bid must be accompanied by Bid security, when required as specified on the Bid Form and the project is valued at more than $500,000, made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. An acceptable form of the Bid Bond is included in the Bidding Documents. Companies who choose to use the certified check, bank money order, or Bid bond shall deliver such to the Issuing Office prior to the bid due date, Attn: Igor Scherbakov, Procurement Manager. Envelopes containing such

sureties shall be mailed with receipt confirmation or delivered in person. Companies who wish to submit digitally authenticated bid bond may do so, along with a Surety Bond Seal Addendum which contains an electronic corporate seal and states the following: [Surety Company] has authorized its Attorney-in-Fact to affix [Surety Company's] corporate seal to any bond executed on behalf of [Surety Company] by any such Attorney-in-Fact by attaching this Addendum to said bond. To the extent this Addendum is attached to a bond that is executed on behalf of [Surety Company] by its Attorney-in-Facts, [Surety Company\ hereby agrees that the seal below shall be deemed affixed to said bond to the same extent as if its raised corporate seal was physically affixed to the face of the bond."

6.02 The Successful Bidder will be required to provide a performance and payment bonds in the amount of 100 percent of the Contract value.

6.03 All bonds shall be in a form acceptable to the Owner, which may include a cashier's check, certified check, or bond executed by a company licensed to do business in the Commonwealth of Virginia as allowed by §2.2-4336 – §2.2-4338 of the Code of Virginia.

6.04 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required performance and payment bonds, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and furnish the required performance and payment bonds within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, not exceeding the difference between the bid for which the bond was written and the next low bid, or the face amount of the bid bond, whichever is less (§2.2-4336-C). Such forfeiture will be Owner's exclusive remedy if Bidder defaults by failure to execute and furnish the required performance and payment bonds and Contract materials as described herein.

6.05 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, or the duration of effective bid submittals specified in the ITB or Request for Qualifications/Proposals, whereupon Bid security furnished by such Bidders will be released.

6.06 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

6.07 Bid security may be waived by the Owner for contracts in excess of $100,000 but less than $500,000. Where a Bid security is waived, prospective bidders shall be prequalified for each project in accordance with §2.2-4317. However, Owner may waive prequalification requirements of a bidder with a current Class A contractor license for contracts in excess of $100,000 but less than $300,000 per §2.2-4336.

ARTICLE 7- CONTRACT TIMES

7.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.

7.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 8- SUBSTITUTE AND "OR EQUAL" ITEMS

8.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Owner authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Owner until after the Effective Date of the Contract.

8.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, and as supplemented by Addenda if applicable. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 9- SUBCONTRACTORS, SUPPLIERS, AND OTHERS

9.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

9.02 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors and Suppliers proposed for the Work within five days after Bid opening.

9.03 The key categories of the Work includes rotary screw positive displacement blowers, externally fed rotary screens, screening washer press, submersible pumps, instrumentation and control and electrical.

9.04 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such

substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

9.05 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. A Bidder declining to make requested substitutions will constitute grounds for forfeiture of the Bid security. Any Subcontractor or Supplier, so listed and against which Owner makes no written objection prior to Notice of Award will be deemed acceptable to Owner subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 10- PREPARATION OF BID

10.01 The Bid Form is included with the Bidding Documents.

10.02 All blanks on the Bid Form must be completed in ink or digitally and the Bid Form signed in ink or digitally authenticated. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

10.03 If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”

10.04 Not Used.

10.05 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

10.06 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.

10.07 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

10.08 Not Used

10.09 Not Used.

10.10 All names must be printed below the signatures.

10.11 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

10.012 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.

10.13 The Bid must contain evidence of Bidder’s authority to do business in the State of Virginia, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid, or Bidder must

provide a statement on Bidder's letterhead certifying their exemption from this requirement.

10.14 Bidder's State of Virginia contractor license number or a covenant by Bidder to obtain said license within the time for acceptance of Bids.

ARTICLE 11- BASIS OF BID

11.01 Lump Sum

A. Bidders must submit a Bid on a lump sum basis for the items as set forth in the Bid Form.

11.02 Series of Lump Sums

A. Bidder shall submit a Bid for each lump sum item as set forth on the Bid Form and shall compute and enter the total of all lump sum items in the space provided on the Bid Form.

B. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the arithmetically correct sum.

11.03 Unit Price

A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Amount" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Amounts"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

11.04 Total Bid Price

A. The Total Bid Price will be the total of all Lump Sum items plus the Total of All Unit Price Bids.

ARTICLE 12- SUBMITTAL OF BID

12.01 All Bids must be submitted electronically via the Virginia Procurement Site which can be found at https://mvendor.cgieva.com/Vendor/public/AllOpportunities.jsp . Any assistance submitting Bids through this system must be directed solely to eVA support/helpdesk. Bidders shall submit the bid by the date and time indicated in the solicitation.

12.02 Bid responses shall conform to instructions in this document. The required Bid Form provided in the solicitation must be fully completed and signed by a person authorized to make legally binding commitments on behalf of the bidder. Scans of wet ink signatures and electronically authenticated bid documents are both accepted. AlexRenew will not accept hard copy (paper) submission of the Bid form. Certain types of bid sureties will be accepted in hard copy as allowed by paragraph 6.01.

12.03 Bidder's failure to submit a bid with a fully completed Bid Form, using the Bid Form provided in this solicitation, shall be cause for rejection of that Bidder's Bid. A Bid will be rejected if its corresponding Bid Form is not signed in the designated space by a person authorized to legally bind the Bidder.

12.04 Modification of or additions to the Bid Form may be cause for rejection of the Bid; however, Owner reserves the right to decide, on a case by case basis, in its sole discretion, whether or not to reject such a Bid as nonresponsive. As a precondition to Bid acceptance, Owner may, in its sole discretion, request that the Bidder withdraw or modify any such modifications or additions which do not affect quality, quantity, price, or delivery.

12.05 Bids and all documents related to this solicitation submitted to Owner by a Bidder or a prospective Bidder shall, upon receipt by Owner, become the property of Owner.

12.06 Submission of a signed Bid Form is certification by the respective Bidder that it read the solicitation documents carefully and fully intends to comply with all the requirements stated in the solicitation or by law. Bidder further certifies that it will accept an award made to it as result of the submission.

ARTICLE 13- MODIFICATION AND WITHDRAWAL OF BID

13.01 No Bid may be withdrawn after it is filed with the Owner but prior to the time set for the opening of Bids unless the Bidder makes a request in writing to the Owner prior to the time set for the opening of Bids. Requests must be delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

13.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.

13.03 After the opening of Bids, a Bidder may withdraw its Bid from consideration if the price of the Bid is substantially lower than other Bids due solely to a mistake therein, provided the Bid was submitted in good faith, the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of the Bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the Bid sought to be withdrawn. If a Bid contains both clerical and judgment mistakes, a Bidder may withdraw his Bid from consideration if the price bid would have been substantially

lower than the other Bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a Bid that can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the Bid sought to be withdrawn. The Bidder must give notice in writing to Owner of a claim of right to withdraw its Bid and provide all original work papers, documents and other materials used in the preparation of the Bid sought to be withdrawn, within two (2) business days after the conclusion of the Bid opening procedure.

13.04 All Bids will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner, or as specified in the Invitation to Bid.

13.05 No Bid may withdrawn under this section when the result would be the awarding of the Contract to another Bid of the same Bidder, or in which the withdrawing Bidder has any interest.

ARTICLE 14- OPENING OF BIDS

14.01 Bids will be unsealed electronically at the time indicated in the Invitation to Bid. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 15- BIDS TO REMAIN SUBJECT TO ACCEPTANCE

15.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 16- EVALUATION OF BIDS AND AWARD OF CONTRACT

16.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, quality or quantity of the Work.

16.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to be nonresponsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder.

16.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner, then Owner will reject the Bid as nonresponsive.

16.04 If Owner awards the Contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid without consideration of proposed substitutions not specifically identified as approved in the Bidding Documents.

16.05 In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

16.06 For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

16.07 This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.

16.08 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

16.09 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 17- BONDS AND INSURANCE

17.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.

17.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 18- SIGNING OF AGREEMENT

18.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

END OF SECTION

SECTION 00 41 00

BID FORM

NOTE TO BIDDER: THE FULL LEGAL NAME OF THE FIRM OR ENTITY SUBMITTING THIS BID MUST BE WRITTEN IN THE SPACE PROVIDED BELOW. THIS BID FORM, AND ALL OTHER DOCUMENT(S) REQUIRED BY THE SOLICITATION TO BE SUBMITTED WITH THIS BID FORM, INCLUDING, BUT NOT LIMITED TO ALL ISSUED ADDENDA, MUST BE FULLY AND ACCURATELY COMPLETED AND SIGNED BY A PERSON AUTHORIZED TO LEGALLY AND CONTRACTUALLY BIND THE BIDDER, OR THE BID MAY BE REJECTED.

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted by:

LEGAL NAME OF ENTITY:
CONTRACTOR LICENSE:
FORMER NAMES: (Insert all other names that this entity has been known by in the past twenty (20) years)
AGE OF THE ENTITY: How many years this entity has been in business under the current name?
PRINCIPAL PLACE OF BUSINESS:
TELEPHONE NO. **CORPORATE WEBSITE**
FORM OF ORGANIZATION: _____ CORPORATION;_____ LIMITED LIABILITY COMPANY; **NAME OF STATE WHERE THE ENTITY WAS FORMED:**
IDENTIFICATION NO. ISSUED TO THE FIRM BY STATE CORPORATE COMMISSION (SCC): If Bidder is exempt from the SCC authorization requirement, it shall include a statement on the entity's letterhead with its application certifying their exemption from this requirement. _____
BIDDER'S STATUS: Please initial one: _____MINORITY OWNED; _____WOMAN OWNED; _____NEITHER

1.02 Not Used

1.03 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents. Attachments to this Bid.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids; or a statement on the Bidder's letterhead certifying their exemption from this requirement; and

C. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s), together with any Unit Prices indicated in Paragraph 3.02:

1. Lump Sum Price

Lump Sum Bid Price	$

2. Cash Allowances for the following items:

a. All specified cash allowance(s) are included in the price(s) set forth below and have been computed in accordance with Paragraph 13.02 of the General Conditions.

Owner's Contingency Allowance	$350,000.00

3.02 *Unit Price Bids*

A. Not used.

3.03 *Total Bid Price (Lump Sum)*

Total Bid Price (Total of all Lump Sum Items and Cash Allowances)	$

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

5.04 *Assigned Goods and Services*

A. Not Used.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Owner written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Owner is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Not used.
12. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive

agreement or rules of any group, association, organization, or corporation (as described in Code of Virginia Section 59.1-68.6 et seq.).

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 6.02.A:
   a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
   b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition, or (d) any act of fraud punishable under the Virginia Governmental Frauds Act (Code of Virginia §18.2-498.1 et seq.).
   c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
   d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

B. The Bidder certifies and warrants that to the best of its knowledge and belief and except as otherwise disclosed, it does not have any organizational conflict of interest, which is defined as a situation in which the nature or work under the contract and the bidder's organizational, financial, contractual or other interest are such that award of the contract may result in the Bidder receiving an unfair competitive advantage, or the Bidder's objectivity in performing the contract work may be impaired. The Bidder agrees that if after being awarded it discovers an organizational conflict of interest with respect to being awarded, it shall make an immediate and full disclosure in writing to Owner which shall include a description of the action which the Bidder has taken or intends to take to eliminate or neutralize the conflict.

ARTICLE 7—TRADE SECRETS OR PROPRIETARY INFORMATION

Trade secrets or proprietary information submitted by a Bidder in connection with a procurement transaction shall not be subject to public disclosure under the Virginia Freedom of Information Act or the Virginia Public Procurement Act. However, except as provided in the Virginia Public Procurement Act, all proceedings, records, contracts and other public records relating to procurement transactions shall be open to the inspection of any citizen, or any interested person, firm or corporation, in accordance with the Virginia Freedom of Information Act. (Cost estimates relating to a proposed procurement transaction prepared by or for a public body shall not be open to inspection.) Therefore, trade secrets or proprietary information submitted by a Bidder in connection

with this Bid shall not be subject to the Virginia Freedom of Information Act (§ 2.2-3700 et seq.); however, in order to invoke this protection, the Bidder shall (i) invoke the protections of this section prior to or upon submission of the data or other materials, (ii) identify the data or other materials to be protected, and (iii) state the reasons why protection is necessary. A Bidder shall not designate as trade secrets or proprietary information (a) the entire Bid; (b) any portion of the Bid that does not contain trade secrets or proprietary information; or (c) line item prices or total Bid prices.

A. Please mark one:

( ) **Yes**, the Bid I have submitted **does** contain trade secrets and/or proprietary information.

( ) **No,** the Bid I have submitted **does not** contain any trade secrets and/or proprietary information.

If Yes, you must clearly identify below (attaching additional pages as necessary) the exact data or other materials to be protected and list all applicable page numbers of the Bid containing such data or materials:

STATE THE SPECIFIC REASON(S) WHY PROTECTION IS NECESSARY:

_____

_____

NOTE: If you fail to identify the data or other materials to be protected and state the reasons why such protection is necessary in the space provided above, you have not invoked the protection, accordingly, effectively the Bid will be open for public inspection consistent with applicable law.

ARTICLE 8—BIDDER QUESTIONNAIRE –NOT USED

BIDDER hereby submits this Bid as set forth above:

INDICATE THE NAME AND CONTACT INFORMATION OF THE PERSON WHO CAN RESPOND AUTHORITATIVELY TO ANY QUESTIONS REGARDING THIS BID (i.e., PROJECT MANAGER):

NAME (PRINTED): _____

TITLE: _____

E-MAIL ADDRESS: _____

TELEPHONE. NO.: _____

The undersigned swears or affirms under the penalty of perjury and upon personal knowledge that the contents of the Bid are true and correct and in full compliance with the entire Bidding Documents.

The undersigned swears or affirms under the penalty of perjury that the Bidder, its agents, servants and/or employees, to the best of his/her knowledge and belief, have not in any way colluded with anyone for and on behalf of the Bidder an unfair advantage over others, nor have they colluded

with anyone for and on behalf of the Bidder, or themselves, to gain any favoritism in the award of any contract resulting from this Bid.

NAME OF AND TITLE OF BIDDER'S REPRESENTATIVE

SIGNATURE OF BIDDER'S REPRESENTATIVE

END OF SECTION

SECTION 00 43 00
VIRGINIA BID BOND

CONTRACT NO. 25-007

BOND NO. _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____

_____

hereinafter called the Principal, and _____

_____

a corporation duly organized under the laws of the State of _____

having its principal place of business at _____

_____ in the State of _____
and authorized to do business in the Commonwealth of Virginia, as Surety,

are held and firmly bound unto AlexRenew, as Owner, hereinafter called the Obligee, in the sum of _____

_____ Dollars
($_____) for the payment for which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.
THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the Principal is herewith submitting his or its Bid for _____

_____

_____
said Bid, by reference thereto, being hereby made a part hereof.

NOW, THEREFORE,

(A) If the bid shall remain open for a period of not less than 60 days following opening of the bids and be rejected, or in the alternate,

(B) If the bid shall remain open for a period of not less than 60 days following opening of the bids and be accepted and the Principal shall execute and deliver a Contract in the form of Contract attached hereto (properly completed in accordance with the bid) and shall furnish a bond for his faithful performance of the Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall furnish a Performance and Payment Bond

for the period of time stipulated, and shall in all other respects perform the agreement created by the acceptance of the bid,

THEN, this obligation shall be void; otherwise the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the said amount of this obligation as herein stated. Provided, however, that in addition to the amount of this obligation as herein stated, the Surety shall be liable for all costs and attorney's fees incurred by the Obligee in enforcing the obligations hereunder.

The Surety, for value received, hereby stipulates and agrees that the obligations of the Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such bid; and the Surety does hereby waive notice of such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and have executed this instrument in six separately signed counterparts, each one of which shall be deemed an original, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Signed and sealed this _____ day of _____, 20_____.

Principal

By _____

Surety

By_____
Attorney-In-Fact

IMPORTANT: The Surety executing bonds must appear on the Treasury Department's most current list (Department Circular 570 as amended and supplemented) and be authorized to transact business in the Commonwealth of Virginia.

END OF SECTION

PART 2

CONTRACTING REQUIREMENTS

SECTION 00 52 00
AGREEMENT

This Agreement is by and between A ("Owner") and [name of contracting entity] ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

- The scope of work includes, but is not limited to demolishing selected equipment, providing new aeration diffusers, rotary-screw blowers, wall-mounted baffles, submersible pumps, screens and one washer-screenings compactor, HVAC ventilation, expanding a mezzanine area, relocating one aluminum stair including valves, piping, ducts, instrumentation, drains and other accessories.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

Centrate Pretreatment Project

Contract No. 25-007

ARTICLE 3—ENGINEER

3.01 The Owner has retained Jacobs Engineering Group, Inc. ("Engineer") to prepare the design for this project.

ARTICLE 4—CONTRACT TIME

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times*

A. The Work will be substantially complete within 450 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 490 days after the date when the Contract Times commence to run.

4.03 *Milestones*

A. Not used

4.04 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration or other dispute resolution proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $10,800 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $10,800 for each day that expires after such time until the Work is completed and ready for final payment.
3. *Milestones:* Not used.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

C. The parties agree that the per diem measure of liquidated damages is a reasonable measure of the damages Owner is likely to suffer in case of delay, and Contractor agrees that it will not challenge the per diem amounts of liquidated damages imposed pursuant to this Paragraph 4.05. Contractor hereby waives any defense as to the validity of any liquidated damages stated herein on the grounds that such liquidated damages are void as penalties not reasonably related to actual damages. The parties further agree that the liquidated damages set forth in this Paragraph 4.05 shall be the Owner's sole remedy for delay as a result of Contractor's failure to achieve the completion dates within the times required by this Agreement. The Owner may, but shall not be obligated to, deduct any liquidated damages that become due from any unpaid amounts then or which thereafter become due to the Contractor under the Contract Documents. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be immediately due and payable to the Owner upon demand

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. Lump sums included in the Contract Price:

Lump Sum Amount	
Description	**Extended Price**
Lump Sum Contract Price	$

B. Allowances:

Allowances Amount	
Description	**Extended Price**
Owner's Contingency Allowance	$350,000

C. Unit Price Work: Not used.

D. Total of Lump Sum Amount, Allowances, and Unit Price Work (subject to final Unit Price adjustment) is $[ ]. The amount listed here is the Contract Price.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Owner as provided in the General Conditions.

6.02 *Progress Payments and Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. 95 percent of the value of the Work completed (with the balance being retainage).

b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 150 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

A. All amounts not paid when due as provided in Article 15 of the General Conditions shall bear interest at the rate of half percent (0.5%) per month.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following, and shall be in the following order of precedence:

1. Written Amendments, Change Orders and Work Change Directives
2. Agreement, inclusive of the Exhibits to this Agreement (enumerated as follows):
   a. None.
3. Performance bond and Payment bond, each together with their respective powers of attorney)
4. General Conditions and Supplementary Conditions
5. Specifications – Divisions 01 and 02
6. Specifications – Divisions 03 through 46
7. Drawings, with figure dimensions taking precedence over scaled dimensions, and detailed Drawings taking precedence over general Drawings
8. Contractor's Bid
9. Instructions to Bidders

For the avoidance of doubt, each of the above Contract Documents shall be deemed to include any Addenda to such Contract Document.

10. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor has carefully studied the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
9. Contractor has given Owner written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Owner is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

2. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition, or (d) any act of fraud punishable under the Virginia Governmental Frauds Act (Code of Virginia §18.2-498.1 et seq.).

3. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

4. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Assigned Goods and Services*

A. Not used.

8.05 *Standard General Conditions*

A. The General Conditions that are made a part of this Contract are a modified Engineers Joint Contract Documents Committee (EJCDC®) C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee. Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. Those portions of the text that originated in EJCDC documents remain subject to copyright. At the Contractor's request, the Owner will provide modifications to the standard wording of the General Conditions in a "track changes" (redline/strikeout) format.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on the date is countersigned by Owner.

Owner:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Contractor:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

*(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

License No.: _____
(where applicable)

State: _____

END OF SECTION

SECTION 00 61 00
PERFORMANCE BOND

Contractor Name: [Full formal name of Contractor] Address *(principal place of business)*: [Address of Contractor's principal place of business]	**Surety** Name: [Full formal name of Surety] Address (principal place of business): [Address of Surety's principal place of business]
Owner Name: AlexRenew Mailing address *(principal place of business)*: 1800 Limerick Street Alexandria, VA 22314	**Contract** Description *(name and location)*: [Owner's project/contract name, and location of the project] Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] *(Date of Bond cannot be earlier than Effective Date of Contract)*	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, including but not limited to correction of defective Work as required therein, which is incorporated herein by reference. Provided, that any alteration which may be made in terms of the Contract, or in the Work to be done under it, or the giving by the Owner of any extension of time for the performance of the Contract, or any other alterations, extension, forbearance on the part of either or both of the Owner or Contractor to the other party shall not in any way release the Contractor and the Surety, or either of them, their heirs, executors, administrators, successors, or assigns from their liability hereunder, notice to the Surety of any such alteration, extension, or forbearance being hereby waived.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, or if the Surety proceeds as provided in Paragraphs 5.1, 5.2 or 5.3 and then fails to perform, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond. If any provision of this Bond is held to be illegal, invalid or unenforceable, such provision shall be fully severable and this Bond shall be construed and enforces as if such illegal, invalid or unenforceable provision had never been part of this Bond, and the remaining provisions of this Bond shall remain in full force and effect and shall not be affected by the illegal, invalid or unenforceable provision, or by its severance from this Bond.

14. The failure or refusal of the Owner to take any action, proceeding or step to enforce any remedy or exercise any right under the Construction Contract or the taking of any action proceeding or step by the Owner, acting in good faith upon the belief that same is permitted, shall not in any way release the Contractor or the Surety, or any of them, or their respective executors, administrators, successors or assigns from liability under this Bond. The Surety hereby waives notice of any amendment, indulgence or forbearance made, granted or permitted by the Owner.

15. Definitions

    15.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    15.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    15.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    15.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

15.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

16. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

END OF SECTION

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SECTION 00 61 50
PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address *(principal place of business)*: [Full formal name of Contractor]	**Surety** Name: [Full formal name of Surety] Address *(principal place of business)*: [Full formal name of Contractor]
Owner Name: AlexRenew Mailing address *(principal place of business)*: 1800 Limerick Street Alexandria, VA 22314	**Contract** Description *(name and location)*: [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] *(Date of Bond cannot be earlier than Effective Date of Contract)*	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal *(Full formal name of Contractor)* By: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____	Surety *(Full formal name of Surety) (corporate seal)* By: _____ *(Signature)(Attach Power of Attorney)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____
Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.	

The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

1. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
2. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
3. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
4. The Surety's obligations to a Claimant under this Bond will arise after the following:
    4.1. Claimants who do not have a direct contract with the Contractor
        4.1.1. have furnished a written notice of non-payment to the Contractor, with a copy to the Owner, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
        4.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
    4.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13), with a copy to the Owner.
5. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
6. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
    6.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
    6.2. Pay or arrange for payment of any undisputed amounts.

6.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant, and the Claimant shall have the immediate right, without further notice, to bring suit against the Surety to enforce any remedy available to it under this Bond.

7. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state and locality in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond. If any provision of this Bond is held to be illegal, invalid or unenforceable, such provision shall be fully severable and this Bond shall be construed and

enforces as if such illegal, invalid or unenforceable provision had never been part of this Bond, and the remaining provisions of this Bond shall remain in full force and effect and shall not be affected by the illegal, invalid or unenforceable provision, or by its severance from this Bond.

14. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. The failure or refusal of the Owner to take any action, proceeding or step to enforce any remedy or exercise any right under the Construction Contract or the taking of any action proceeding or step by the Owner, acting in good faith upon the belief that same is permitted, shall not in any way release the Contractor or the Surety, or any of them, or their respective executors, administrators, successors or assigns from liability under this Bond. The Surety hereby waives notice of any amendment, indulgence or forbearance made, granted or permitted by the Owner.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

        16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

        16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

        16.1.7. The total amount of previous payments received by the Claimant; and

        16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

    16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

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SECTION 00 70 00
GENERAL CONDITIONS

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ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

Agreement—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

Application for Payment—The document prepared by Contractor, in a form acceptable to Owner, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

Bid—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bidder—An individual or entity that submits a Bid to Owner.

Bidding Documents—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

Bidding Requirements—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

Change Order—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

Change Proposal—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or seeking other relief with respect to the terms of the Contract.

Claim

a. A demand or assertion by Contractor to Owner, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times, or seeking other relief with respect to the terms of the Contract.

b. A demand for money or services by a third party is not a Claim.

Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous

waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

Contract—The entire and integrated written contract between Owner and Contractor concerning the Work.

Contract Documents—Those items so designated in the Agreement, and which together comprise the Contract.

Contract Price—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

Contractor—The individual or entity with which Owner has contracted for performance of the Work, named as such in the Agreement.

Cost of the Work—See Paragraph 13.01 for definition.

Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

Effective Date of the Contract—The date, indicated in the Agreement, on which the Contract becomes effective.

Electronic Document—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

Electronic Means—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

Engineer—The individual or entity named as such in the Agreement.

Field Order—A written order issued by Owner which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

Governmental Unit – Means, other than Owner, any federal, state, or local government and any political subdivision or any governmental, quasi-governmental, judicial, public or statutory instrumentality, administrative agency, authority, body or entity.

Hazardous Environmental Condition—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

b. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

Laws and Regulations; Laws or Regulations—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all Governmental Units.

Liens—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

Milestone—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

Notice of Award—The written notice by Owner to Contractor accepting Contractor's Bid.

Notice to Proceed—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

Owner—AlexRenew , an authority duly organized and existing under the laws of the Commonwealth of Virginia.

Owner's Consultant -- An individual or entity having a contract with Owner to furnish services with respect to the Project as an independent professional associate or consultant and who is identified in the Contract Documents.

Owner-Related Party – Owner, Engineer, Owner's Consultant, Project Representative, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

Progress Schedule—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

Project—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

Project Representative—The authorized representative of Owner assigned to assist Owner at the Site. As used herein, the term Project Representative includes any assistants or field staff of Project Representative.

Request for Proposals—A formal request from the Owner to public or selected Respondents or Bidders to submit a proposal. May be used in conjunction with or in place of an Invitation to Bid.

Request for Qualifications—A formal request from the Owner to public or selected Respondents or Bidders to submit a statement of qualifications. May be used in conjunction with or in place of an Invitation to Bid.

Samples—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

Schedule of Submittals—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Owner's review of the submittals.

Schedule of Values—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

Shop Drawings—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

Site—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

Specifications—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

Subcontractor—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

Submittal—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Owner, or that is indicated as a Submittal in the Schedule of Submittals accepted by Owner. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Owner, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

Substantial Completion—The time at which the Work (or a specified part thereof) has progressed to the point where the Work (or a specified part thereof) is sufficiently

complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

Successful Bidder—Contractor.

Supplementary Conditions—The part of the Contract that amends or supplements these General Conditions.

Supplier—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

Technical Data – Those items expressly identified as Technical Data in the Supplementary Conditions, including but not limited to (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

Underground Facilities—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

Unit Price Work—Work to be paid for on the basis of unit prices.

Work—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

Work Change Directive—A written, signed directive from Owner to Contractor issued on or after the Effective Date of the Contract ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed," and the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import. Such words are used to describe an action or determination of Owner as to the Work. It is intended that such action or determination will be solely to evaluate, in general,

the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Owner any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 9 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents; or

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents.

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: No later than 15 days after Notice of Award, Contractor shall deliver to Owner the performance bond and payment bond required to be provided by Contractor in accordance with Article 6.

B. *Evidence of Contractor's Insurance*: No later than 15 days after Notice of Award, Contractor shall deliver to Owner, with copies to each additional insured (as identified in Paragraph 6.03.C), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in Paragraph 6.03.C), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

D. For the avoidance of doubt, Notice to Proceed will not be issued and Contractor shall not be permitted to begin Work at the Site until Contractor complies with its obligations in Paragraph 2.01.A and B above.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four (4) printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one (1) original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review.

2.03 *Before Starting Construction*

A. *Preliminary Submittals*: Within ten (10) days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Owner for timely review:

1. a preliminary Progress Schedule in conformance with Division 01 of the Specifications indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values in conformance with Division 01 of the Specifications for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the Submittals referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Preliminary Submittals*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Owner, Contractor, and others as appropriate, will be held to review the Submittals submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable Submittals are submitted to Owner.

1. The Progress Schedule will be acceptable if it provides an orderly progression of the Work to completion within the Contract Times, and is compliant with the schedule requirements set forth in Division 01 of the Specifications. Such acceptance will not impose on Owner responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work and is compliant with the Schedule of Values requirements set forth in Division 01 of the Specifications.

4. If a foregoing submittal is not acceptable, Contractor will have an additional 10 days to revise and resubmit the Submittal.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents comprise the entire agreement between Owner and Contractor governing the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project. In resolving inconsistencies among two or more components of the Contract Documents, the precedence shall be as set forth in the Agreement.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to the Owner.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral. Owner is not responsible for any representation or purported agreement concerning conditions or contract requirements made by any employee, agent or representative of Owner prior to the Effective Date of the Contract, unless such representation or understanding is expressly stated in the Contract Documents.

E. Owner will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision. Each and every clause or other provision required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be amended to make such insertion.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Contractor and Engineer, Owner's Consultant, or Project Representative, or any third-party beneficiary rights to Contractor;

2. any contractual relationship between: (i) Owner, Engineer, Owner's Consultant, or Project Representative; and (ii) any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

3. any obligation on the part of Owner to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Owner any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Owner, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01. Contractor shall not be entitled to any adjustment for any unreported conflict, error, ambiguity, or discrepancy that Contractor had actual knowledge of.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Owner in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Owner, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01. Contractor shall not be entitled to any adjustment for any unreported conflict, error, ambiguity, or discrepancy that Contractor had actual knowledge of.

3. Contractor shall not be liable to Owner for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Owner take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor shall submit to Owner in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Owner will be the final interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work, subject to Contractor's rights to submit a Claim in accordance with Article 12 hereof.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract, provided Contractor has complied with the requirements of Article 2 of these General Conditions.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which Owner determines are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Owner whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall submit updated Progress Schedules at the times and in the manner set forth in Division 01 of the Specifications. Updated Progress Schedules shall not change the Contract Times. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Paragraph 4.05 and Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner or anyone for whom Owner is responsible delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to submit a request for an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to submit a request for an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Weather conditions that are more severe than those for the five (5) year NOAA averages for the locale of the Project;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are also conditioned upon the provisions of Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site and obtain and pay for easements for permanent structures or permanent changes in existing facilities. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not

unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless, the Owner-Related Parties from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against any Owner-Related Party to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations. If Contractor fails to comply with this Paragraph 5.02.B, Owner shall have the right to take corrective action and charge the costs of doing so to Contractor, including withholding amounts otherwise due Contractor to reimburse Owner's costs of doing so.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents. If Contractor fails to comply with this Paragraph 5.02.C, Owner shall have the right to take corrective action and charge the costs of doing so to Contractor, including withholding amounts otherwise due Contractor to reimburse Owner's costs of doing so.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject

any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may reasonably rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner, or any of its officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then Contractor shall promptly, but in no event later than 48 hours after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Owner's Review*: After receipt of written notice as required by the preceding paragraph, Owner will promptly review the condition in question; determine whether it is necessary to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; and advise Contractor in writing of its findings and conclusions.

C. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

   c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

   b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

   c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

D. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following shall be included in the Contract Price, and Contractor shall have full responsibility for:

   a. reviewing and checking all such information and data,

   b. locating all Underground Facilities shown or indicated in the Contract Documents,

   c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

   d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

3. In accordance with Paragraph 5.05.A.2, it is understood and agreed that the Contract Price includes all of the permanent and temporary Underground Facilities in their present or relocated positions, and Contractor agrees that no additional compensation will be allowed for normal delays, inconvenience, or damage sustained by Contractor due to any interference from said Underground Facilities, the operation of moving the Underground Facilities, the making of new connections thereto if required by the Contract Documents, or by any other requirements of the owner(s) of the Underground Facilities.

B. *Not Shown or Indicated:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, then Contractor shall, promptly (but in no event later than 48 hours) after becoming aware

thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner in writing regarding such Underground Facility.

C. *Owner's Review*: Owner will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings;
2. identify and communicate with the owner of the Underground Facility;
3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
4. advise Contractor in writing of its findings and conclusions.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Early Resumption of Work*: If at any time Owner determines that Work in connection with the Underground Facility may resume prior to completion of Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then Owner may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
   a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
   b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
   c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 Hazardous Environmental Conditions at Site

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner, or any of its officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Where Hazardous Environmental Conditions are shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, Contractor shall take such action as is necessary, in accordance with applicable Laws and Regulations, to plan for and to remediate and render harmless all such Hazardous Environmental Conditions. Remediation plans for such known Hazardous Environmental Conditions shall be provided to Owner for approval prior to undertaking the remediation.

D. If Contractor encounters any unknown Hazardous Environmental Conditions at the Site, it shall stop Work immediately in the affected part of the Work to the extent required to avoid any such safety or health hazard until it has taken such action as is necessary, in accordance with pertinent Laws and Regulations, to protect the interests of any affected party. Contractor shall, immediately upon encountering any Hazardous Environmental Conditions at the Site, notify Owner and, if required by Laws and Regulations, all Governmental Units with jurisdiction over the Project or Site.

E. Contractor shall take all necessary measures required to ensure that Hazardous Environmental Conditions are remediated or rendered harmless in accordance with pertinent Laws and Regulations. Contractor shall, prior to proceeding with any such work: (a) obtain all environmental site assessments of the affected property and submit copies of such assessments to Owner for its approval; (b) develop remediation plans

for the Hazardous Environmental Conditions, subject to Owner's approval; and (c) obtain all pertinent permits to implement such plans. During the period of any investigation and remediation efforts, Contractor shall take all necessary measures to isolate and contain such Hazardous Environmental Conditions from the unaffected parts of the Work, and shall continue the Work to the maximum extent possible on unaffected parts of the Work.

F. Except for those Hazardous Environmental Conditions set forth in Paragraph G below, Contractor will be entitled to submit a request for an adjustment to the Contract Price and/or Contract Time(s) to the extent Contractor's cost and/or time of performance have been adversely impacted by the presence, removal or remediation of unknown Hazardous Environmental Conditions. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

G. Notwithstanding anything to the contrary in the Contract Documents, Contractor shall bear full responsibility for the handling, treatment, storage, removal, remediation, avoidance, or other appropriate action (if any), with respect to: (a) any Hazardous Environmental Conditions present at, on, in or under, or migrating and/or emanating to or from the Site, that were generated by or brought or caused to be brought on the Site by any act or omission of Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible; (b) those Hazardous Environmental Conditions identified in paragraph C above; and (c) the creation or exacerbation of any Hazardous Environmental Condition due to the negligence, recklessness or willful misconduct of Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, defend and hold harmless the Owner-Related Parties from and against all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from (a), (b) and/or (c) above.

H. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

5.07 *Historical Artifacts*.

A. All articles of historical or scientific value, including but not limited to coins, fossils, and articles of antiquity, which may be uncovered by Contractor during the progress of the Work shall become Owner's property. Such findings shall be reported immediately to Owner, who will determine the method of removal, where necessary, and the final disposition thereof. If Contractor establishes that such discoveries have directly and materially impacted Contractor's cost or time of performance, then Contractor will be entitled to submit a request for an adjustment to the Contract Price and/or Contract Time(s) to the extent Contractor's cost and/or time of performance have been adversely impacted by the presence, removal or remediation of unknown Hazardous Environmental Conditions. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to provide Owner with a required bond within the time required by Paragraph 2.01.A, Owner may exclude the Contractor from the Site and exercise Owner's termination for cause rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the Commonwealth of Virginia to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in Paragraph 6.03.C, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other additional insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in Paragraph 6.03.C, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the

Project, and to name as additional insureds those set forth in Paragraph 6.03.C) on each Subcontractor's commercial general liability and automobile liability insurance policy; and

2. Suppliers to purchase and maintain commercial general liability and any other insurance that is appropriate for their participation in the Project.

H. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

I. If Contractor has failed to provide Owner with the documents required by Paragraph 2.01.B within the time required by Paragraph 2.01.B, or has failed to maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination for cause rights under Article 16.

J. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

K. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

L. The insurance and insurance limits required herein are minimums and will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

M. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 30 days prior written notice (10 days if cancellation is for non-payment) has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to Owner and all other additional insureds.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, Automobile Liability (unless the contractor does not own or lease any vehicles, in which case, hired and non-owned coverage is to be provided as part of the Commercial General Liability) and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in the Supplementary Conditions or elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract. In no case shall the period of coverage be terminated before a period ending one year after issuance of the final payment;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include a waiver of subrogation in favor of the Owner and all additional insureds with regard to any claim covered by the insurance policies herein required; Such requirement for insurance policies to include waivers of subrogation shall also apply to any insurances required of subcontractors as denoted herein; and

6. include all necessary endorsements to support the stated requirements.

Contractor shall be responsible for any deductibles or self-insured retentions applicable to insurance policies carried as a result of these requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds the Owner-Related Parties, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: As provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be commercially appropriate unless specifically provided for in the Supplementary Conditions or required by Laws and Regulations). Owner shall be an insured on the policy as its interests may appear.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: In addition to the limited coverage for existing property under builder's risk, the Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner will provide Contractor advance notice of such occupancy or use and request that the Contractor provide such notice to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such

policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against the Engineer, Owner's Consultant, Project Representative, and all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against the Owner-Related Parties and all individuals or entities identified in the Supplementary Conditions as insureds, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy unless the loss was sustained by the Owner as an additional insured on the Contractor's builder's risk policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause or additional insured clause. A named insured receiving insurance proceeds of $500,000 or more under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and

procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and Owner has no responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner except under extraordinary circumstances. Contractor's superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communication given to or received from Contractor's superintendent shall be binding on Contractor. Contractor's superintendent must be acceptable to Owner.

7.03 *Labor; Working Hours*

A. Contractor shall provide competent, skilled, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site. Contractor shall, upon demand from Owner, immediately remove any manager, superintendent, foreman or workman whom Owner may consider incompetent or undesirable.

B. Contractor shall be fully responsible to Owner for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or Owner's observed holidays only with Owner's written consent, which will not be unreasonably withheld. Regular working hours shall be defined as 7 a.m. to 6 p.m. unless otherwise approved in advance by Owner.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Owner, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

D. Without limiting the responsibility or liability of Contractor pursuant to this Agreement, all warranties given by manufacturers on materials or equipment incorporated in the Work are hereby assigned by Contractor to Owner. If requested, Contractor shall execute formal assignments of said manufacturer's warranties to Owner. All such warranties shall be directly enforceable by Owner. Such assignment shall in no way affect Contractor's responsibilities and duties during the warranty period

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Owner authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Owner in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Owner will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Owner determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

3) has a proven record of performance and availability of responsive service.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Owner's Evaluation and Determination*: Owner will evaluate each "or-equal" request. Owner may require Contractor to furnish additional data about the proposed "or-equal" item. Owner will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Owner determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Owner will advise Contractor in writing of any negative determination.

D. *Effect of Owner's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. Owner's denial of an "or-equal" request will be final and binding.

E. *Treatment as a Substitution Request*: If Owner determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Owner consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Owner authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Owner to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Owner will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Owner will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Owner may decide is appropriate under the circumstances.

3. Contractor shall make written application to Owner for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

a. will certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design;

2) be similar in substance to the item specified; and

3) be suited to the same use as the item specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Owner's Evaluation and Determination*: Owner will evaluate each substitute request. Owner may require Contractor to furnish additional data about the proposed substitute item. Owner will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Owner's review is complete and Owner determines that the proposed item is an acceptable substitute. Owner's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Owner will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Whether or not Owner approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Owner's Determination*: If Owner approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. Owner's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Owner a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless the Owner-Related Parties from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents. Additionally, in the event Owner is enjoined from the operation or use of the Work or any part thereof in connection with any dispute resolution proceeding, Contractor shall (at its sole expense) take all reasonable steps possible to procure for Owner the right to operate or use the Work or part thereof. If Contractor cannot so procure the aforesaid right within a reasonable time, Contractor shall then promptly (at Contractor's sole expense): (i) modify the Work so as to avoid infringement of any patent or other proprietary interest, or (ii) replace said Work with Work that does not infringe or violate any such patent or other proprietary interest, or (iii) remove said Work and refund any compensation theretofore paid to Contractor and pay to Owner any transportation costs and other expenses that may have been paid or incurred by them in connection with the Work so removed.

7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when

Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

B. Certified water pollution control equipment and facilities are exempt from state Sales tax within the Commonwealth of Virginia. Owner will submit an application for sales tax exemption to the Virginia Department of Environmental Quality. Upon receipt of this application, the Virginia Department of Environmental will evaluate the application, if appropriate, and make a certification to the Virginia Department of Taxation. If approved, the Virginia Department of Taxation will provide a tax exemption certificate to Contractor.

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Owner shall not be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless the Owner-Related Parties from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

D. Contractor shall keep fully informed of all Laws and Regulations in any manner affecting those engaged or employed in the Work or the materials used in the Work or in any way affecting the conduct of the Work.

E. During the performance of the Contract, Contractor agrees as follows:

1. Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or other basis prohibited by state law relating to discrimination in employment, except where

there is a bona fide occupational qualification reasonably necessary to the normal operation of Contractor. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

2. Contractor, in all solicitations or advertisements for employees placed by or on behalf of Contractor, will state that such Contractor is an equal opportunity employer.

3. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this paragraph.

4. Contractor will include the provisions of the foregoing Paragraphs 1-3 in every subcontract or purchase order over $10,000, so that the provisions will be binding upon each Subcontractor and Supplier.

F. During the performance of this Contract, Contractor agrees to: (i) provide a drugfree workplace for Contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in Contractor's workplace and specifying the action will be taken against employees or violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of Contractor that Contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each Subcontractor and Supplier.

G. Contractor represents that it does not, and during the performance of this Contract, it shall not, knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.

H. Contractor represents that if it is organized as a stock or non-stock corporation, limited liability company, business trust or limited partnership or registered as a registered limited liability partnership, it is authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity if required by law, and that it shall not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth of Virginia, if so required by law, to be revoked or cancelled at any time during the term of this Contract.

I. Contractor acknowledges that Owner does not discriminate against faith-based organizations.

7.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Owner for reference. Upon completion of the Work, Contractor shall deliver these record documents to Owner. Contractor shall certify, to

the best of its knowledge and belief, that the record documents delivered to Owner and the approved Samples are complete.

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs. This safety representative shall work with Owner to ensure that no construction activities at the Site infringe upon any activities of Owner or its employees or the existing facilities located at the Site. Further, the safety representative shall work closely with Owner to ensure that Contractor's emergency plans do not adversely affect or infringe upon the emergency or regular operations of Owner's existing facilities or its emergency plans and operations.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). If Contractor has not restored damaged property within 48 hours of written notice by Owner, or sooner in the case of an emergency, Owner may proceed with restoration of the property, improvements, or facilities deemed necessary. The cost thereof will be deducted from and monies due or which may become due Contractor under the Contract.

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury,

or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner of the specific requirements of Contractor's safety program with which Owner's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Owner has issued a written notice to Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

K. Owner reserves the right to suspend the Work or any portion thereof if, in its reasonable judgment, Contractor has or is violating the Contract or any requirement thereof, including but not limited to violations of Owner's safety programs or any Law or Regulation related to jobsite safety. Contractor shall not receive any adjustment in the Contract Price or Contract Time on the basis of such suspension, even if it is determined that no violation actually existed.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

B. Contractor shall inform Owner of safety data sheets and hazard communications requirements to further ensure that Owner's employees and representatives are not exposed to hazards associated with any portion of the Project in which Owner's employees and representatives do not have prior specific knowledge.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Owner prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an

emergency. If Owner determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

B. Contractor shall immediately inform Owner if any condition exists or occurs which has the potential to inflict or cause an environmental health or safety risk to any employee or property of Owner.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Owner specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Owner for review and approval in accordance with the accepted Schedule of Submittals.

1. Shop Drawings

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar

data to show Owner the services, materials, and equipment Contractor proposes to provide, and to enable Owner to review the information for the limited purposes required by Paragraph 7.16.C.

2. Samples

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Owner may require to enable Owner to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Owner's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Owner's Review of Shop Drawings and Samples*

1. Owner will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Owner's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Owner's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Owner's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Owner's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Owner has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Owner will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Owner's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Owner's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Owner's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Owner and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Owner on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Contractor shall be responsible for Engineer's charges to Owner for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

a. Contractor shall submit all such Submittals to Owner in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

b. Owner will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Owner's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Owner regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Owner;

2. Payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Owner or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Owner;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless the Owner-Related Parties from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by the intentional misconduct or any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable. Nothing herein shall require Contractor to indemnify any Owner-Related Parties for losses, damages, costs or judgments arising out of such party's own negligence.

B. In any and all claims against an Owner-Related Party by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Owner with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Owner, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Owner.

D. Owner shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design

professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Owner's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site. The parties acknowledge, however, that the Site is an active work location for Owner and shall remain such for the duration of this Project, and that Contractor shall in no way interfere with or impede Owner's regular business activities.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that

Contractor may cut or alter others' work with the written consent of Owner and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Owner in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, then Owner shall be responsible for coordinating such entities with work of Contractor.

B. Owner intends to have coordination meetings among Contractor and such other entities in an effort to manage the overall program associated with the work being performed at the Site. Contractor agrees that it will attend and participate in these logistics meetings and shall cooperate with Owner and such other entities to the extent reasonably necessary for the performance by such other entities of their work.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an

adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor or an Owner-Related Party, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner; and (2) indemnify and hold harmless the Owner-Related Party from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Owner and, if so designated in the Contract Documents, Owner's Project Representative or Owner's Consultant.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

9.12 *Other Responsibilities*

A. The foregoing Paragraphs 9.01 through 9.11 shall not be construed to limit the other responsibilities of Owner set forth in these General Conditions.

ARTICLE 10— OWNER'S ROLE AND RIGHTS DURING CONSTRUCTION

10.01 *General*

A. This Article 10 generally establishes Owner's role and rights during construction, with the understanding that such role and rights are inclusive of other roles and rights that are set forth elsewhere in these General Conditions and other Contract Documents.

B. Owner shall have the right to stop work whenever, in its sole discretion, Owner determines that such action is needed to prevent improper execution of the Work or to otherwise project Owner's interests.

10.02 *Owner's Representative*

A. Owner may furnish a Project Representative to assist Owner in providing more extensive observation of the Work or fulfill other responsibilities of Owner. If Owner elects to furnish a Project Representative, then Owner will notify Contractor in writing of the identity, authority and responsibilities of any such Project Representative.

10.03 *Clarifications and Interpretations*

A. Owner will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as Owner may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations shall be binding on Contractor. If Contractor disagrees with such clarifications and interpretations, or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, it may pursue its rights to submit a Claim in accordance with Article 12 hereof.

10.04 *Authorized Variations in Work*

A. Owner may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and shall be binding on the Contractor, who shall perform the Work involved promptly. If the Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of such adjustment, it may pursue its rights to submit a Claim in accordance with Article 12 hereof.

10.05 *Rejecting Defective Work*

A. Owner shall have authority to disapprove or reject Work which Owner believes to be defective, or that Owner believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Owner shall also have authority to require special inspection or testing of the Work as

provided in Paragraph 14.4, whether or not the Work is fabricated, installed, or completed.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Owner will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work.

10.07 *Limitations on Owner's Responsibilities*

A. Owner will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

B. Owner will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

C. Owner's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

D. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Project Representative and Owner's Consultant, if any.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, a Field Order, or a written amendment signed by Owner and Contractor.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract must be approved by the Owner.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14; or (c) otherwise agreed upon in writing by the parties to be a change in the Work; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

C. Contractor agrees that duly executed Change Orders will constitute full resolution of all Contractor's rights arising out of or related to the subject matter of the Change Order, including but not limited to time extensions, delays, disruption and cumulative impact.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

11.04 *Field Orders*

A. Owner may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Contractor, which shall perform the Work involved promptly, unless the provisions of Paragraph B below are applicable.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then it shall, before proceeding with the Work, provide written notice to Owner of such position within three (3) days of its receipt of the Field Order. Contractor shall not proceed with the work until directed by Owner. If directed by Owner to proceed with the work, Contractor shall submit a Change Proposal within (ten) days of its receipt of the directive. Contractor's failure to provide the 3-day written

notice set forth above shall constitute a waiver of Contractor's right to seek an adjustment in the Contract Price or Contract Times for the Field Order.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually per 13.01.B1 and 13.01.B2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Owner to request an adjustment in the Contract Times or Contract Price; challenge a set-off against payment due or any other position taken by Owner; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Owner within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to Owner within 15 days after the submittal of the Change Proposal.

a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Owner's Initial Review*: If in its discretion Owner concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Owner may request that Contractor submit such additional supporting data by a date specified, prior to Owner beginning its full review of the Change Proposal.

4. *Owner's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Owner), Owner will conduct a full review of each Change Proposal and either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing and provided to Contractor. If Owner does not take action on the Change Proposal within 60 days, then Contractor may at any time thereafter submit a letter to Owner indicating that as a result of Owner's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Owner's decision is final and binding upon Contractor, unless Contractor appeals the decision by filing a Claim under Article 12.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: In the event Contractor appeals any Owner decision regarding Change Proposals, the provisions in this article shall govern the appeal.

B. *Submittal of Claim*: Contractor shall deliver a Claim to Owner promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 21 days of the decision under appeal. The responsibility to substantiate a Claim rests with Contractor. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: Owner shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party.

D. *Partial Approval*: If Owner approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action Contractor invokes the procedure set forth in Article 17 for final resolution of disputes.

E. *Denial of Claim*: If efforts to resolve a Claim are not successful, Owner may deny it by giving written notice of denial to Contractor. If Owner does not take action on the Claim within 30 days, then as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial Contractor invokes the procedure set forth in Article 17 for the final resolution of disputes.

F. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, foremen, safety representatives, and other personnel (other than any personnel of a position higher than a foreman) employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in

the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

      1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

   c. *Construction Equipment Rental*

      1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

      2) Costs for the use, operating, maintenance, fuel, storage and other costs of all equipment and machinery owned by Contractor or a Contractor-related entity will be paid at the rates established by the most recent version of the Rental Rate Blue Book published by Nielsen/DATAQUEST, Inc. of Palo Alto, California, or its successors. The rental rates to be used shall be the published monthly rate divided by 176 to yield an hourly rate, which hourly rate shall be further adjusted by multiplying it by the Rental Rate Blue Book adjustment rate for the year the equipment was manufactured and by the regional factor contained in the Rental Rate Blue Book estimated hourly operating cost rate.

      3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading,

unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence or intentional misconduct of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence or intentional misconduct of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, personnel above the position of foreman, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence or intentional misconduct of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Owner will review with Contractor Owner's preliminary determinations on such matters before rendering a written decision thereon. Owner's written decision thereon will be final and binding, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor is more than 25% higher or lower than the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such

other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, its consultants and other representatives and personnel, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Owner timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any Governmental Unit having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such Governmental Unit, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Owner the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Owner, Contractor shall, if requested by Owner, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Owner timely notice of Contractor's intention to cover the same and Owner had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Owner's Rights*: Owner has the right to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner has actual knowledge will be given to Contractor.

D. *Remedying Defective Work*: Contractor will start the process of remedying defective Work within five (5) days of Owner's notice of such defective Work. If Contractor does not effectuate such remedy within fourteen (14) days of Owner's notice, then Owner shall have the right to perform directly, or have performed by third parties, the necessary remedy, and the costs thereof shall be borne by Contractor. If the parties agree that the remedy will take longer than the 14-day period set forth above, they may mutually agree to modify the remedy period.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by Governmental Units because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord

with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work, and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Owner has the right to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Owner, then Contractor shall, if requested by Owner, uncover such Work for Owner's observation, and then replace the covering, all at Contractor's expense.

C. If Owner considers it necessary or advisable that covered Work be observed by Owner or inspected or tested by others, then Contractor, at Owner's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Owner may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Owner to correct defective Work, or to remove and replace defective Work as required by Owner, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, and Owner's other contractors access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Owner. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. Contractor shall submit to Owner by the 25th day of the month an Application for Payment filled out and signed by Contractor covering the Work completed through the last day of the previous month, and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Owner will, within 15 days after receipt of each Application for Payment, including each resubmittal, either notify Contractor in writing that Application for Payment has been approved or disapproved, in whole or in part, and the reasons for the disapproval.

2. By approving an Application for Payment, Owner will have relied upon the representations of Contractor that:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment have been fulfilled.

3. In reviewing and acting upon Applications for Payment, Owner shall not be deemed to have represented that the inspections it has made (if any) to check the quality or the quantity of the Work as it has been performed have been exhaustive, or extended to every aspect of the Work in progress.

4. Owner may refuse to approve the whole or any part of any Application for Payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, may revise or revoke any payment approval previously made, as Owner may believe necessary, in its sole discretion, to protect itself from loss because:

   a. the Work is defective, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Owner has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Fifteen (15) days after Owner's approval of an Application of Payment, the amount approved (subject to the provisions of Paragraph 15.01.E below, will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. Owner is entitled to impose a set-off against payment based on any of the following:

a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, Owner will give Contractor written notice stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner in writing that the entire Work is substantially complete and request that Owner issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner and Contractor, shall make an inspection of the Work to determine the status of completion. If Owner does not consider the Work substantially complete, Owner will notify Contractor in writing giving the reasons therefor.

C. If Owner considers the Work substantially complete, Owner will prepare and deliver to Contractor a certificate of Substantial Completion which will fix the date of Substantial Completion. There shall be attached to the certificate a punch list of items to be completed or corrected before final payment. If Owner determines that the Work is not substantially complete, it shall so notify Contractor in writing, stating the reasons therefor.

D. Prior to Owner issuing the certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases

Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor and Owner will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner in writing that Contractor considers any such part of the Work substantially complete and request Owner to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner and Contractor shall make an inspection of that part of the Work to determine its status of completion. If Owner does not consider that part of the Work to be substantially complete, Owner will notify Contractor in writing giving the reasons therefor. If Owner considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Owner will promptly make a final inspection with Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Owner, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with

the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents;

b. consent of the surety, if any, to final payment;

c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all duly pending Change Proposals and Claims;

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work; and

f. a general release executed by Contractor waiving, upon receipt of final payment by Contractor, all Claims and other rights arising out of or related to the Contract, except those Claims specifically identified and listed in the general release that remain unsettled at the time of final payment, which Claims shall have been previously made in writing in accordance with this Contract, or which may be made in accordance with the terms of the Virginia Public Procurement Act.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Owner's Review of Final Application and Approval of Payment*: If Owner is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Owner will, within 10 days after receipt of the final Application for Payment, approve such Application for Payment. Such approval will account for any set-offs against payment that are necessary in Owner's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. If Owner does not approve the Application for Payment, Owner will notify Contractor in writing the reasons for its disapproval, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Owner's approval of final payment pursuant to Paragraph B above.

D. *Final Payment Becomes Due*: Owner shall set off against the amount approved for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's approval of the final Application for Payment.

15.07 Waiver of Claims

A. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner, other than those specifically set forth in the general release required by Paragraph 15.06.A.2(f), which Claims shall have been previously made in writing in accordance with this Contract, or which may be made in accordance with the terms of the Virginia Public Procurement Act.

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner

will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

15.09 Contractor Payments to Subcontractors

A. In the event that Contractor has not received payment from the Owner for work performed by a Subcontractor under the Contract, Contractor shall be liable for the entire amount owed to such Subcontractor and shall pay such Subcontractor within 60 days after the receipt of an invoice following satisfactory completion of the Work for which the Subcontractor has invoiced. Contractor shall not be liable for amounts otherwise reducible due to the Subcontractor's noncompliance with the terms of their contract. However, in the event that the Contractor withholds all or a part of the amount invoiced by the Subcontractor under the terms of their contract, the Contractor shall notify the Subcontractor, within 50 days of the receipt of such invoice, in writing, of its intention to withhold all or a part of the Subcontractor's payment with the reason for nonpayment, specifically identifying the contractual noncompliance, the dollar amount being withheld, and the lower tier Subcontractor responsible for the contractual noncompliance. Payment by the Owner shall not be a condition precedent to Contractor's payment to any Subcontractor of any tier, regardless of Contractor receiving payment for amounts owed to Contractor. Any provision in any of the Contract Documents contrary to this Paragraph 15.09 shall be unenforceable. Nothing in this Paragraph 15.09.A shall be construed to apply to or prohibit the inclusion of any retainage provisions in the Agreement.

B. Within seven (7) days after receipt of amounts paid by Owner to Contractor, Contractor shall take one (1) of the following two (2) actions with regard to Work performed by a Subcontractor:

1. Pay Subcontractor for the proportionate share of the total payment received from Owner attributable to the Work performed by Subcontractor under the Contract; or

2. Notify Owner and Subcontractor, in writing, of Contractor's intention to withhold all or a part of Subcontractor's payment with the reason for nonpayment.

C. Individual Contractors and Subcontractors shall provide their social security numbers and Contractors organized as proprietorships, partnerships or corporations shall provide their federal employer identification numbers to Owner prior to the start of Work under this Contract.

D. Contractor shall pay interest to Subcontractors on all amounts owed by Contractor that remain unpaid after seven (7) days following receipt by Contractor of payment from Owner for Work performed by Subcontractor under this Contract, except for amounts withheld as allowed in Paragraph.

E. Unless otherwise provided under the terms of this Contract, interest on undisputed portion of unpaid invoices from Subcontractors shall accrue at the rate of one percent (1%) per month.

F. Contractor shall include in each of its subcontracts a provision requiring each Subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower tier Subcontractor as set forth in this Paragraph.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work. Notwithstanding the above, if Owner suspends Work or any portion thereof due to its reasonable judgment that Contractor has or is violating the Contract or any requirement thereof, including but not limited to violations of Owner's safety programs or any Law or Regulation related to jobsite safety, then Contractor shall not receive any adjustment in the Contract Price or extension of the Contract Times, even if it is determined that no violation actually existed.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor’s persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor’s disregard of Laws or Regulations of any Governmental Unit having jurisdiction; or

4. Contractor’s repeated disregard of the authority of Owner, Project Representative and/or Owner’s Consultant.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days’ written notice that Owner is considering a

declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price related to Work completed by the Contractor but unpaid as of the time of termination exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents

in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of any Governmental Unit, or (2) Owner fails for 90 days to pay Contractor any undisputed sums due under this Contract, then Contractor may, upon 7 days' written notice to Owner, and provided Owner does not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Owner has failed for 30 days to pay Contractor any sum undisputed sums due under this Contract, Contractor may, 7 days after written notice to Owner, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

The party seeking to invoke these Article 17 processes shall provide written notice of the disputed matter to the other party in a "Notice of Request for Dispute Resolution" for which it wishes to use these Article 17 processes. The Notice of Request for Dispute Resolution shall identify the substance and basis for the disputed matter, along with the amount disputed, if any. The party receiving the Notice of Request for Dispute Resolution shall respond in writing within ten business days by setting forth that party's position with respect to the disputed matter raised in the Notice of Request for Dispute Resolution.

B. *Voluntary Mediation*: If the parties mutually agree to use voluntary mediation for any disputed matter, the mediation proceeding shall be conducted by a single, impartial

mediator appointed by and under the rules of The McCammon Mediation Group. The parties shall split the hourly fees of the mediator 50/50, and each shall bear its respective legal fees and other costs. The mediation will take place at the Tysons Corner, Virginia offices of McGuireWoods, LLP, unless the parties agree otherwise. If they elect to seek mediation, each party shall participate in good faith in such mediation as a strict condition precedent to such party instituting any litigation authorized below. All communications and submissions concerning and during the mediation will be strictly confidential and inadmissible in any court proceeding.

C. *Litigation:* Any and all disputed matters which are unresolved following voluntary mediation, if pursued, shall be resolved exclusively by litigation in either the Circuit Court of the City of Alexandria, Virginia or the United States District Court for the Eastern District of Virginia. These two courts shall have exclusive and binding jurisdiction and venue over any and all disputes arising under the Contract. THE PARTIES VOLUNTARILY WAIVE ANY AND ALL RIGHTS TO A TRIAL BY JURY. THE FACT FINDER SHALL BE THE COURT SITTING WITHOUT A JURY.

1. If the disputed matter involves Contractor's Claim for costs or damages due to Owner's alleged delaying or disrupting Contractor in the performance of its Work under the Contract, Contractor shall be liable to Owner and shall pay it for a percentage of all costs incurred by Owner in investigating, analyzing, negotiating, and litigating the Claim, which percentage shall be equal to the percentage of Contractor's total delay and disruption claim that is determined through litigation to be false or to have no basis in law or in fact.

2. If Owner has denied Contractor's Claim for costs or damages due to Owner's alleged delaying or disrupting Contractor in the performance of Work under the Contract, Owner shall be liable to and shall pay such Contractor a percentage of all costs incurred by the Contractor in investigating, analyzing, negotiating, and litigating the Claim, which shall be equal to the percentage of Contractor's total delay and disruption claim for which the Owner's denial is determined through litigation to have no basis or have been made in bad faith.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor any other Owner-Related Party shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the Commonwealth of Virginia.

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

18.11 *Independent Contractor*

A. The relationship of Contractor to Owner shall be that of an independent contractor.

18.12 *Liens*

A. The Site is owned by Owner, which is a public entity and, as such, cannot be subjected to a mechanics' lien. Contractor, on its own behalf and on behalf of its Subcontractors, hereby agrees not to permit any liens of any nature whatsoever, including but not limited to mechanics liens to be placed on the Site. In the event that a lien is placed on the Site, upon ten (10) days' notice so to do, Contractor will remove the lien, and if necessary will secure a bond to cover the amount of the lien. The payment bond shall be the sole and exclusive remedy for Subcontractors and Suppliers for nonpayment hereunder.

18.13 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

END OF SECTION

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SECTION 00 80 00
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the General Conditions of the Construction Contract. The General Conditions remain in full force and effect except as amended. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC4.05.”

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. *Workers’ Compensation and Employer’s Liability:* Contractor shall purchase and maintain the following Virginia Statutory Workers’ Compensation and Employer’s Liability Insurance:

Workers’ Compensation and Related Policies	Policy limits of not less than:
Workers’ Compensation	
Commonwealth of Virginia	Statutory
Employer’s Liability	
Bodily injury by accident per accident	$1,000,000
Bodily injury by disease per employee	$1,000,000
Bodily injury by disease policy limit	$1,000,000

E. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

F. *Commercial General Liability—Form and Content:* Contractor’s commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Premises and Operations coverage.
2. Products and completed operations coverage.
    a. Such insurance must be maintained for three years after final payment.
    b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract)

evidence of continuation of such insurance at final payment and three years thereafter.

3. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
4. Severability of interests and no insured-versus-insured or cross-liability exclusions.
5. Underground, explosion, and collapse coverage.
6. Personal injury coverage.
7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

G. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

H. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	**Policy limits of not less than:**
General Aggregate – applicable on a per project basis	$2,000,000
Products—Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Bodily Injury and Property Damage—Each Occurrence	$1,000,000

I. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	**Policy limits of not less than:**
Bodily Injury	
Each Person	$1,000,000
Each Accident	$1,000,000
Property Damage	
Each Accident	$1,000,000
[or]	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000

J. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must follow form and be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	**Policy limits of not less than:** **(per occurrence/general aggregate)**
Total Contract Value of $10 million or more	$9,000,000
Total Contract Value $3 million to $9.99 million	$4,000,000
Total Contract Value less than $3 million	$1,000,000

K. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein.

L. *Builder's Risk:* Contractor shall purchase and maintain builder's risk insurance as required in Section 6.04 of the General Conditions (Section 00 70 00) and as further provided below. Such coverage shall be written on an 'all risk' (or 'special perils') basis and shall include, but not be limited to physical loss or damage during construction, operational testing and commissioning arising from fire, lightning, explosion, collapse, wind, flood, storm, earth movement/earthquake and resulting damage from faulty workmanship or design. Such coverage shall include the Owner and other contractors and subcontractors as insureds.

Commercially reasonable sublimits for demolition, debris removal, property in transit, temporary works, damage to existing property, soft costs, landscaping, loss adjustment

expenses, expediting expenses, and increased costs for building code compliance will be acceptable. Deductibles under the policy shall be no more than $100,000.

END OF SECTION

PART 3

SPECIFICATIONS

SECTION 01 10 00
GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 WORK

A. Work must comply with all applicable codes, shall be structurally sound and fit for intended use. Deviation from plans and specifications necessary for compliance shall be reported to the Owner subject for approval.

1.02 REFERENCE STANDARDS

A. The following is a list of standards which may be referenced in this section:

1. Association Advancing Occupational and Environmental Health (ACGIH).
2. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
3. National Electrical Code (NEC).
4. Occupational Safety and Health Administration (OSHA): Article 1926.21 - Safety Training and Education.

1.03 DEFINITIONS AND ABBREVIATIONS

A. AlexRenew: Owner.

B. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

C. Disposal: Removal offsite of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Engineer: The Design Engineer aka the Engineer of Record, who is an Owner’s authorized representative assigned to provide the project’s technical design and to make technical interpretations, reviews and acceptance

E. Inspector: The Owner’s authorized representative assigned to make any inspection of work performed and materials furnished. The Inspector has no authority to change or alter the Contract in any manner whatsoever.

F. Owner: AlexRenew or its authorized representative.

G. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

H. Resident Engineer: The authorized representative of the Owner in charge of one or more construction contracts. The Resident Engineer has no authority to change or alter the Contract in any manner whatsoever.

I. WRRF: Water Resource Recovery Facility.

1.04 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
2. Temporary Control Submittals:
   a. Noise control plan.
   b. Dust control plan.

1.05 PERMITS

A. Contractor shall be responsible for obtaining licenses, certificates, registrations, approvals, fees, and permits in connection with the prosecution of the Work.

B. Contractor shall comply with the Government of the City of Alexandria, Standard Contract Provisions Article 7 “Contractor’s Responsibilities” and all other appropriate City of Alexandria and Federal laws and regulations relative to permits, licenses, certificates and registrations.

C. Contractor shall submit with each payment request, a list of all fees, including copies of invoices thereof to perform work included in the Contract.

D. No separate payment will be made therefore. Include the costs of fees in the Task Order Price Proposal and Schedule of Values.

1.06 TEMPORARY CONTROL PLANS

A. Noise Control Plan:

1. The Contractor shall comply with the City of Alexandria’s Noise Control Code, Title 11, Chapter 5, which sets the maximum permissible noise level as measured at the property line.
2. Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels or noise ordinances.
3. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments. Identify any additional plans to mitigate noise related to City waiver request for extended working hours.

B. Dust Control Plan: Contractor shall plan so that no visible dust leaves the property during construction. To this end, the Contractor shall implement appropriate dust/emission control measures and monitor/report spot and daily average readings each day. If a threshold of 3 mg/m^3 Particulates, not otherwise specified (PNOS) (the ACGIH TLV) is exceeded, Work shall be stopped, at the Contractor's expense, until the Contractor demonstrates to the Owner's Environmental Representative's satisfaction that the situation has been rectified and, henceforth, shall be appropriately managed.

1.07 PROTECTION OF WORK AND PROPERTY

A. Comply with Owner’s safety rules while on Owner’s property and Section 01 54 50, Construction Safety.

B. Comply with the Owner’s site access and security requirements, including, but not limited to the wearing of identification badges and site entry through guard stations at designated locations.

C. Keep Owner informed of serious onsite accidents and related claims. Report near misses and accidents immediately, and related claims within 24 hours.

D. Use of Explosives: No blasting or use of explosives will be allowed onsite.

1.08 EXISTING STRUCTURES AND UTILITIES

A. All known utilities have been shown on the drawings according to the best information available. It is the Contractor’s responsibility to contact all owners of structures or utilities above ground, on the ground, or below the ground, within the Project area so that said owners may stake or otherwise make or protect their facilities.

B. Dimensions and locations of existing facilities are not necessarily exact. Where installation or connections of any part of the work to existing facilities are required, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment, which is dependent on the correctness of such information.

C. Contractor shall make no claim for delays or additional monies due to his failure to make his own investigations or verifications.

D. Contractor must provide facilities and be responsible for the protection of all structures, buildings and utilities, underground, on the surface, or above ground against trenching, dewatering, or any other activity connected with the Work throughout the entire Contract Time.

E. When structures and utilities have been properly shown or marked and are disturbed or damaged in the execution of the Work, they must be repaired immediately in conformance with best practice and the approval of the owner

of the damaged utility or structure. Repairs and associated cost shall be the responsible of the Contractor with no additional cost to the Contract Price or additional time to the Contract Time.

F. When structures and utilities have not been properly shown or located as outlined above and are disturbed or damaged in the prosecution of the Work, take whatever steps are necessary for safety and notify the affected utility owner and avoid any actions which might further damage the structure or utility.

1.09 CONTRACTOR USE OF PREMISES

A. Limit use of premises for Work, for storage, and for access, to allow for:

1. The Owner occupancy.
2. Work by other Contractors.

B. Coordinate use of premises under direction of the Owner.

C. Assume full responsibility for protection and safekeeping of products under this Contract.

D. Obtain and pay for use of additional storage or work areas off site when needed and required for operations under this Contract.

1.10 CONTINUOUS OPERABILITY OF FACILITIES

A. Continuous operation of all existing facilities is required unless otherwise stated and shall in no way be affected by Contract operations unless the Owner gives written permission to do so.

1.11 PARTIAL OWNER OCCUPANCY

A. Schedule and substantially complete designated portions of Work for the Owner's occupancy prior to Substantial Completion of entire Work.

B. The Owner will occupy designated areas for the purpose of operation.

C. Execute Certificate of Substantial Completion for each designated portion of Work prior to the Owner occupancy. Contractor shall allow:

1. Access for the Owner personnel.
2. Operation of equipment, including HVAC and electrical systems.

1.12 ACCESS TO SITE FOR INSPECTIONS

A. The Contractor shall provide the representatives of the City, State, Federal Government, United States Environmental Protection Agency (EPA), United States Army Corps of Engineers (USCOE), United States Department of

Labor, United States Occupational Safety and Health Administration (OSHA), and any other persons designated by the Owner with access to the work whenever it is in preparation or in progress.

B. The Contractor shall provide all necessary and proper facilities for such access and inspection.

C. The Contractor must also provide that the Grants Officer, the Comptroller General of the United States, or any authorized representative shall have access to any books, documents, papers, and records of the Contractor which are pertinent to the project for the purpose of making audit, examination, excerpts, and transcriptions thereof.

1.13 CONSTRUCTION MANAGER

A. The construction administration for the project will be conducted by a Resident Engineering & Inspection team (RE&I) to be provided by the Owner.

1.14 TRESPASS

A. Contractor will be solely responsible for any trespass upon adjacent property or injury thereto resulting from or in connection with his or her operations. He or she will be liable for any claims that may be made on account of trespass or the deposit of debris of any kind upon private and/or other public property.

1.15 ADDITIONAL CONTRACTS WITHIN PROJECT AREA

A. The Owner reserves the right to let other contracts and to permit other utilities and their contractors to perform work within the general areas of this Contract.

B. Such proposed Work is indicated on the Drawings to the extent that specific information relating thereto was available when the project was prepared. Whether or not such Work to be performed by others is indicated on the Drawings, the Contractor shall make such reasonable adjustments in his operations and schedules as the Owner may direct for the purpose of coordinating his work with that being performed by others.

C. If any part of the work depends, for proper execution or results, upon the Work of any other contractor, the Contractor shall inspect and promptly report to the Owner any defects in such Work that render it unsuitable for proper execution of Contract Work. The Contractor’s failure to so inspect and report such conditions of other contract Work affecting the Contract will constitute an acceptance of the other contractor’s Work.

D. No additional compensation over and above that reflected in the Schedule of Prices will be allowed for complying with the provisions of this Section.

1.16 TEMPORARY HEAT AND COOLING

A. If temporary heat and cooling is required for the protection of the Work or equipment, the Contractor shall provide approved heating and cooling apparatus and shall maintain heating and cooling as required.

B. Temporary heating apparatus shall be installed and operated in such a manner that finish work shall not be damaged thereby.

C. No separate payment will be made therefore.

1.17 TEMPORARY WATER SUPPLY

A. Work in Owner WRRF or Remote Facilities:

1. Temporary water supply shall be provided as specified in Section 01 50 52, Contractor Facilities.

1.18 TEMPORARY CONSTRUCTION POWER

A. It shall be the Contractor’s responsibility to ensure that adequate power is available at all times and of sufficient capacity and characteristics to supply the proper voltage and current for the various types of construction, tools, motors, welding machines, lights, heating plant, pumps and work required.

B. Contractor shall provide temporary constructions power as specified in Section 01 50 52, Contractor Facilities.

1.19 EQUIVALENT MATERIALS, PRODUCTS AND EQUIPMENT

A. Whenever a material, article, system or sub-system is specified or described by using the name and/or model of a proprietary product or trademark or the name of the manufacturer or vendor, the specified item shall establish the type, function, and quality required; it shall be understood that the words "or approved equal" are implied whether or not they follow the proprietary enumeration.

B. The Owner reserves the right to determine when proprietary items have no equivalency, and when uniformity of operations, interchangeability of parts, standard parts inventory, etc., are in the Owner's best interest.

C. Requests for review of equivalency will be considered upon submission of sufficient information as described herein, to allow a complete review.

D. Such requests will not be accepted from anyone other than the Contractor. Such submission must be made prior to purchase, fabrication, manufacture or use of the equivalent items under consideration.

E. The Contractor is responsible for all delays caused by its failure to submit complete and accurate information with any request for approval of any material, article, system or subsystem, as an equivalent.

F. Contractor Risk:

1. If the Contractor includes in his bid or later proposes any material, product or equipment that he considers equivalent to that specified, the Contractor assumes all risk of any sort associated with acceptance or rejection of proposed equivalent items.
2. The Contractor shall no right to make a claim based upon his bid that includes a proposed equivalent items(s) of work which resulted in a lower bid amount for said item(s) or lower total bid.

G. Submission Requirements: Each submission for equivalency review shall include:

1. Justification for use of the proposed equivalent item(s), including evidence, as applicable, that Contract specified material, product or equipment is unobtainable or unobtainable within an acceptable time for Contract completion;
2. A description of the difference between specified items(s) and proposed equivalent item(s) and the comparative advantages and disadvantages of each;
    a. All relevant data addressing each specified parameter to show equivalency;
    b. A prediction of any effects the proposed change will have on operation and maintenance costs where applicable.

H. Delays: The Contractor shall be responsible for all delays caused by its failure to submit complete and accurate information on or with a request for approval of any material, article, system or subsystem, as an approved equivalent.

I. Supplemental Requirements:

1. Any tests required by the Owner to establish quality and performance standards shall be promptly conducted by or through the Contractor at no additional cost to the Owner.
2. The Contractor shall submit any additional data requested by the Owner for the equivalency review.
3. The Contractor shall satisfactorily accomplish all changes, including any engineering associated with use of equivalent items, at no additional cost to the Owner.

J. The Contractor shall have no right of appeal to any decision rejecting the equivalency of any item.

1.20 HOLIDAYS

A. The following days are recognized as legal holidays:

1. New Year's Day
2. Martin Luther King Jr Day
3. Memorial Day
4. Juneteenth
5. Independence Day
6. Labor Day
7. Veterans Day
8. Thanksgiving Day
9. Day after Thanksgiving
10. Christmas Eve
11. Christmas Day

B. Any day declared a holiday by the Owner shall be observed. When a holiday falls on a Sunday, the following Monday will be observed as a holiday. When a holiday falls on a Saturday, the proceeding Friday will be observed.

PART 2 GENERAL

2.01 GENERAL

A. Materials shall be:

1. Newly manufactured specifically for the project, or
2. New, unused materials obtained from manufacturer's inventory stock or the manufacturer's authorized distributor's stock, provided such materials have been manufactured within the past 2 years from the date of order, are totally in compliance with Specifications and, in either case, are so certified in writing by the manufacturer, and include manufacturer's warranties.
3. Prohibited if from any source other than specified herein, or are re-conditioned, remanufactured or partly remanufactured.

PART 3 EXECUTION

3.01 STARTING WORK

A. Start Work within 10 days following the date stated in the Notice to Proceed and execute with such progress as may be required to prevent delay to the general completion of the project. Execute Work at such items and in or on such parts of the project, and with such forces, material and equipment, as to complete the Work in the time established by the Contract. At all times, schedule and direct the Work so that it provides an orderly progression to completion within the specified time for completion.

3.02 PROTECTION OF WORK AND PROPERTY

A. All facilities and utility lines within the construction area not to be abandoned, relocated, or reconstructed shall be protected and maintained in service by the Contractor.

B. Short interruptions of certain services will be permitted when essential to the Contractor's operations as herein specified when approved by the Owner.

C. Contractor shall provide and maintain such temporary supports, bypasses or protective devices as may be necessary to preserve the functions of the various utility systems throughout the duration of the Work.

D. All damage to existing facilities which is attributable to the Contractor's activities shall be repaired by owner of the damaged facility or his designee, at the expense of the Contractor.

E. All damage to existing water and/or sewer service connections attributable to the Contractor's activities shall be repaired or replaced in accordance with the City of Alexandria Plumbing Code and shall be performed by a plumber licensed in the City of Alexandria, at the expense of the Contractor.

F. The Contractor will be held responsible for any collateral damage incurred while delivering equipment or materials while preparing for or providing work in this Contract.

G. Contractor shall be required to restore to their original or better condition any yard surfaces, roadways, curbs, gutters or structures which are damaged by the Contractor's activities.

H. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.

I. Maintain in continuous service existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and other utilities encountered along line of the Work, unless other arrangements satisfactory to owners of said utilities have been made.

J. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate activities with owner of said utility and perform work to their satisfaction.

K. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.

L. Keep fire hydrants and water control valves free from obstruction and available for use at all times.

M. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.

N. Notify property owners and utility offices that may be affected by construction operation at least 2 days in advance: Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.

O. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.

P. Maintain original Site drainage wherever possible.

3.03 TEMPORARY CONTROLS

A. Execute noise and dust control plans.

B. Air Pollution Control:

1. Minimize air pollution from construction operations.
2. City of Alexandria requires that Contractors shall not cause or permit vehicles to idle for more than 10 minutes when parked.
3. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.
4. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust.
5. To prevent dust, treat unpaved streets, roads, detours, or haul roads used in construction area with a dust-preventive treatment or, periodically, with water application. AlexRenew WRRF plant effluent shall be used for dust control applications. Strictly adhere to applicable environmental regulations for dust prevention.
6. Comply with dust control requirements of Section 02 41 00, Demolition.
7. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon

as need no longer exists. Clean any dirt or dust entering operating buildings as a result of construction activities on a daily basis.

8. Provide load covers for all trucks carrying waste materials, rubbish, or debris, to minimize dust pollution.
9. The Engineer will monitor areas contiguous to the Contractor's immediate work and office areas for appreciable dust accumulation on vehicles, structures, equipment, etc. As directed by the Engineer, the Contractor shall clean structures and take any additional preventive measures to limit dust accumulation at no additional cost to the Owner.

C. Water Pollution Control:

1. Divert sanitary sewage and nonstorm waste flow interfering with construction and requiring diversion to sanitary sewers after consulting with the Owner. Do not cause or permit action to occur which would cause an overflow to existing waterway.
2. Prior to commencing excavation and construction, obtain Engineer's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and stormwater flow, including dewatering pump discharges. Provide detailed plans to show temporary treatment facilities planned for use to handle construction dewatering operations and disposal or discharge.
3. Comply Section 01 57 13, Temporary Erosion and Sediment Control.
4. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in sanitary drains. Disposal of any wastes into storm drains, streams, or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, chemicals, and rubbish.
5. Provide oil drip pans under all heavy construction equipment that is parked onsite for more than 7 days. Dispose or recycle oils in accordance with local Regulations.

D. Energy and Emissions Control:

1. The Contractor shall maintain an inventory record of all construction equipment either owned or rented for the Project. Include equipment make, model, engine size, specific emission controls, EPA Tier classified, etc. Make inventories available to the Engineer for review as requested.
2. Provide mufflers on all vehicles and equipment to reduce emissions.
3. Operate construction equipment and vehicles only when necessary to limit idling and emissions.
4. Maintain tire pressures on construction equipment per manufacturer's recommendation and keep records of maintenance on site.
5. The Contractor is encouraged to utilize EPA Tier 4 compliant construction equipment where available, based on rated engine power.

6. Utilized battery-operated or electric-powered compressors, hand tools, and other small construction equipment to the greatest extent practical except where physical access does not permit electrical equipment.

3.04 UTILITY PROTECTION AND NOTIFICATION

A. Existing utilities shall be protected and kept in service during the life of the Contract unless relocation, reconstruction, abandonment, or outage is specifically permitted by the utility owner or by the Owner.

B. Miss Utility will not issue a blanket ticket for excavation at multiple sites. The Contractor shall notify Miss Utility of impending excavation for each location at least forty-eight (48) hours prior to excavation.

C. MISS Utility will not mark out utilities located inside the WRRF fence line. In such cases, it is the Contractor's responsibility to locate and mark out the utilities. The Contractor's is responsible for means and methods to confirm the location of sensitive utilities prior to excavation.

D. The Contractor shall provide and maintain such temporary supports as may be necessary to preserve the functions of the various utility systems. No wires, conduits and/or pipes shall be removed until all services therein have been made inoperable. Any damage sustained to utilities above or below the ground shall be repaired at Contractor expense. The Contractor shall notify the impacted parties, by telephone, of the impending excavation or demolition and the location thereof, at least 48 hours, but not more than ten (10) (excluding Saturdays, Sundays, and holidays) in advance of proceeding with excavation or demolition work necessitated by the Contract.

E. The Contractor shall not proceed with work until utility facilities involved have been located, disconnected, or otherwise adjusted by utility companies.

F. Hand excavation is required within 18-inches from the nearest point of a natural gas line; Contractor may hand excavate a test pit to locate the line.

G. If the underground utility is damaged, under no circumstance shall the Contract backfill an excavation affecting said utility without first receiving permission from the utility owner and the Owner.

H. In the event of damage to any utility service encountered in the performance of this contract; the Contractor will immediately notify the owner by telephone and shall report the damage with complete details to the Owner utilizing the current "UTILITY STRIKE REPORT" form no later than 24-hours after the incident occurs.

3.05 BLASTING

A. No blasting is permitted.

3.06 ILLUMINATION OF NIGHT WORK

A. The Contractor shall maintain sufficient light illumination levels for safe operation in all active work areas during evening and night work.

B. Lights shall be shielded from Federal Aviation Administration (FAA) flight paths to and from Reagan National Airport.

C. No direct payment will be made for night lighting.

3.07 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for handling, hauling, storing, and distributing all materials, equipment and surplus materials for the Contract as necessary or required, shall provide suitable storage for materials and equipment during work progress, and be responsible for the protection, loss of, or damage to Contract materials and equipment until final Contract completion.

B. Materials and equipment shall be placed so as not to injure any part of the Work or existing facilities and so that free access is available at all times to all parts of the Work.

C. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

3.08 ADVERSE WEATHER PRECAUTIONS

A. During adverse weather, the Contractor shall take necessary precautions so that the Work may progress properly and is satisfactory in all respects.

B. During hot weather, and cold weather below 40 deg. F, any part of the work that is temperature dependent shall be properly protected.

END OF SECTION

SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The completed Work will provide Owner with a simplified and reconfigured Centrate Pretreatment System in Building 69.

B. The Work includes, but is not limited to, the major tasks listed below. The listing of major tasks in this section is not meant to imply anything whatsoever about the necessary construction sequencing of individual tasks, which must be carefully coordinated throughout the construction period.

1. Demolishing selected equipment, including but not limited to:
    a) Three CPT decanters system.
    b) Three aeration diffuser systems, one per CPT reactor.
    c) One hydrocyclone system.
    d) Three CPT Recycle pumps.
    e) One heat exchanger pump.
    f) One heat exchanger.
    g) Five CPT blowers.
    h) One nitrogen generating system.
    1) One supplemental carbon storage tank, valves and other accessories and piping.
    i) Three supplemental carbon feed pumps.
    j) Piping, duct, valves, instruments and other accessories associated with the above.
2. Inspecting and refurbishing existing assets, including but not limited to:
    a) CPT Reactor Mixers 3/CPT Overflow Tank Mixer
    b) Heat Exchanger 1 and 2.
    c) Heat Exchanger Pump 1 and 2.
    d) CPT Reactor Drain Pump.
3. Providing new equipment for the reconfigured CPT system, including but not limited:
    a) Two CPT Influent Screens (Externally Fed Rotary Screens).
    b) One CPT Wash-Press.
    c) Three CPT blowers (Rotary Screw Positive Displacement).
    d) Flat-aeration diffuser systems in the CPT reactors.
    e) Two Parabolic Wedge-Wire Screens above the CPT reactors.
    f) Two CPT Recycle pumps (Submersible Pumps)
    g) Internal Solids Settling Devices (ISSD) in the CPT reactors

4. Replacing and upgrading existing assets, including but not limited to:
   a. CPT Reactor Mixers 1 and 2
   b. Multiparameter Composition Sensors System above CPT Reactors 1 and 2, upgraded to include conductivity and nitrite monitoring.
5. Retaining, cleaning, relocating, and adjusting existing assets including but not limited to:
   a. Exhaust fans, motor and associated ductwork, roof louver and associated roofing repairs, and accessories.
   b. Wash-down and foam-spray lines inside the CPT reactors.
   c. Level, pressure and temperature instruments.
6. Cleaning and flushing new and retained pipes, accessories and appurtenances within the limits of Building 69, including, but not limited to:
   a. Dewatering centrate, low air pressure, centrate pretreatment influent, recycles, plant/potable/non-potable water, centrate pretreatment effluent, heat-exchanger recycle, chemical lines.
7. Integrating new and retained assets in the commissioning of the CPT System, including but not limited to:
   a) Functional and performance testing of equipment.
   b) Clean water testing.
   c) Facility startup with CPT Seeding.
   d) Operational demonstration.
   e) Commissioning report.

C. The words "provide" or "to be provided" used in the listing of major work tasks above, shall mean "furnish and install, complete and ready for final acceptance and operation in conformance with the Contract Documents."

D. Implicit in each task in the listing of major work tasks below is the overall task to "perform all miscellaneous Work under all of the various trades necessary to complete the intent of the Contract Documents, which is to provide a fully-functional, operating, and finished facility."

E. This Project is located within an active area of the Alexandria Renew Enterprises Water Resource Recovery Facility (WRRF) at 1500 Eisenhower Avenue, Alexandria, VA 22314. Specifically, work area includes Building 69. Coordination with the plant to ensure accessibility is required for proceeding with work through submission of a PIR, as applicable. This includes aligning work with process shutdowns to accomplish the Work. Sequencing construction and coordination of the work with the Owner is a project requirement – refer to Article 1.04 for additional information and requirements.

1.02 RELATED WORK AT THE SITE

A. The Contractor is hereby notified that there may be other construction contracts underway on the site during the performance of this contract.

B. Other projects may be or become active during the term of this contract. See list in Section 01 31 13, Project Coordination, and contact the Construction Manager for the most current information.

C. Refer to Section 01 31 13, Project Coordination, for work restrictions and additional information.

1.03 OTHER AGENCIES/UTILITY OWNERS REVIEW/INSPECTION COSTS

A. The Contractor shall pay directly to other agencies and utility owners all costs incurred by the agency/utility owner related to inspection, coordination meetings.

1.04 SEQUENCING

A. The Contractor shall commence Work on the date specified in a written notice to proceed and all Work shall be completed as specified in Section 00 52 00, Agreement. The Contractor is reminded, however, that all Work shall be scheduled and proceed in such sequence as to avoid interference and delays to normal Owner operations.

B. The requirements included hereinafter are necessary to minimize conflicts with ongoing Owner Facilities and other working contracts in the immediate vicinity. Whether or not such Work being performed by others is indicated on the Drawings, the Contractor shall make such reasonable adjustments in this operations and schedules as the Engineer may direct for the purpose of coordinating his Work with that in–progress by others.

C. All roadways and pathways affording ingress to and egress from the work area shall be maintained in-service and kept free of obstructions at all times.

D. The Contractor shall submit a Plant Impact Request (PIR) to AlexRenew's Construction Manager for Owner approval when directly impacting Owner's operations, processes, changes in traffic patterns, or major deliveries impacting Owner traffic or roadway closures.

1. Submit the PIR at least 10 days prior to the planned interruption
2. Provide specific dates and times for impacts
3. Provide supporting documentation including detailed description of work, site plans, cross-sections, one-line diagrams, maintenance of traffic plans, etc., in order to clearly show the impact and to clearly identify plans and procedures to minimize the impact.

1.05 SCHEDULING

A. The Contractor shall commence Work when the Notice to Proceed is formally issued by the Owner. Refer to Section 01 32 00, Construction Progress Documentation, for additional information.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 15 20
CONSTRUCTION SECURITY

PART 1 GENERAL

1.01 SUMMARY

A. Work specified in this section includes but is not limited to work site security program, entry control and restrictions.

1.02 SUBMITTALS

A. Informational Submittals: Contractor Security Plan.

1.03 GENERAL

A. Security Program:

1. The Contractor shall:
   a. Protect the Work including all field office trailers, lockboxes, or similar and their contents from theft, vandalism, and unauthorized entry.
   b. Initiate a site security system and program, at the time of mobilization onto the work-site, which provides adequate security for site stored and installed material, product, and equipment.
   c. Maintain the security program throughout the Task Order duration.
   d. Be responsible at all times for security of Contractor storage and lay-down areas, and for all Contractor plant, material, equipment, and tools, as well as, for those belonging to subcontractors.
   e. Provide the Owner with a list of 24-hour emergency phone numbers.

B. Entry Control:

1. No entry on Owner property will be allowed without either an AlexRenew Identification (ID) Badge, Contractor Badge, or if their name appears on a preauthorized list.
2. The Contractor shall:
   a. Comply with the Owner's site access and security requirements, including, but not limited to the wearing of Owner furnished identification badges and site entry through guard stations at designated locations.
   b. Restrict entry of unauthorized personnel and vehicles onto the project or work site.

c. Maintain copies of vehicle insurance cards or other proof of insurance on-site for vehicles permitted on-site.
d. Maintain an Employee/Visitor/Delivery Log and make the log available to the Owner every Friday by 12 PM or on request.

C. Restrictions: The Contractor shall not allow cameras on site, or photographs to be taken except with prior approval of the Owner.

1.04 WORK SITE ENTRY IDENTIFICATION

A. Contractors imbedded for six months or more on Owner facilities, or other work areas in this Contract.

1. Contractor's Core Staff will be eligible to receive an Owner furnished AlexRenew ID Badge; Cores Staff are defined as follows:
   a. On-site 5 days per week.
2. Contractor's Non-Core Staff will be eligible to receive an Owner furnished Contractor Badge; Non-Core Staff are defined as follows:
   1) On-site as needed.
3. All persons (the Contractor and subcontractors) who need to work on-site will be required to display an Owner furnished ID badge on their person. The Contractor shall provide the following for each employee as a pre-requisite to badging:
   a. Name of company employing individual.
   b. A recent 1 inch by 3/4 inch head color photograph of individual.
   c. Individual's name.
   d. Statement signed by the individual and the company's safety manager stating that the named individual has completed the site safety orientation training and has a valid OSHA 10-hour safety certification card.
   e. A $30.00 dollar badge deposit to be reimbursed when the badge is turned in following the completion of the employee's project assignment.
4. Field staff new to the site that have not received an Owner ID shall be escorted by a Contractor employee with a valid ID to the Contractor's Field Trailer. The employee shall not be permitted to work on the site until such time that they have received their site safety orientation and have been issued a valid Owner ID.
5. Each individual shall wear a hard hat bearing the company logo, their full name and an Owner furnished "Safety Trained" sticker.
6. Each worker entering the Owner site areas and facilities will be expected to produce their ID card when requested to do so by uniformed security personnel or other Owner personnel or agents.

B. The Contractor shall provide a list of new hires, guest visitors or supplier deliveries to security 24 hours in advance. No person or delivery shall be permitted entry unless they appear on the list. Supply the following information:

1. Deliveries:
   a. Name of firm suppling the materials (should match with packing slip).
   b. Contractor contact person and phone number.
   c. Site destination of delivery.
   d. Materials/equipment to be delivered.
   e. Estimated time of arrival and unloading time required.
2. Personnel:
   a. Name of new hire (or existing company employee who is new to site) or visitor.
   b. Contractor contact person and phone number.

C. Visitors shall be escorted by a Contractor employee with a valid ID to the Contractor's Field Trailer. The visitor shall not be permitted to leave the field trailer until such time that they have received their site safety orientation. Visitors shall always be escorted around the facility by a Contractor representative with a valid ID.

1.05 CONTRACTOR SECURITY PLAN

A. Prior to the performance of any work the Contractor shall submit to the Owner for review and comment a security plan commensurate with the needs of the Task Order and signed by an officer of the Contractor. Adequacy of the security plan is the responsibility of the Contractor.

B. The security plan shall:

1. Include employee site security and safety orientation program.
2. Include security measures to protect Contractor employees and other persons from injury, prevent material damages, or avoid financial losses.
3. Cover security procedures related to Contractor tools and equipment that shall be mobilized for the Work.
4. Cover the Contractor's Safety Plan, including awareness of work by the Plant or others on the site.

C. The Owner will not review the Contractor security plan for adequacy.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.02 RESPONSIBLE INDIVIDUAL

A. Provide a letter indicating the name and address of the individual authorized to execute Modifications, and who will be responsible for informing others in the Contractor's employ and the Subcontractors of changes to the Work.

1.03 MINOR CHANGES IN THE WORK

A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Resident Engineer using a Field Order.

1.04 CHANGE ORDER PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time, will be issued by the Owner, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.

1. Proposal requests issued by the owner are for information only. Do not consider them instruction either to stop work in progress, or to execute the proposed change.
2. Unless otherwise indicated in the proposal request, within 2 days or 48 hours of receipt of the proposal request, submit a detailed estimate of cost necessary to execute the proposed change which complies with Articles 11 and 13 of the General Conditions and Part 3 below.
    a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the AlexRenew.

1. Include a statement outlining the reasons for the change and the effect of change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Price and Contract Time.
2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in General Conditions and Section 01 61 00, Common Product Requirements, if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

C. Proposal Request Form: Use Change Order Proposal Request Form provided by Owner.

D. Proposal shall remain firm for a maximum period of 45 days after receipt by Resident Engineer.

E. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a Claim for an adjustment in Contract Price or Contract Times (or Milestones).

1.05 CLAIMS

A. Include, at a minimum:

1. Specific references including:
   a. Drawing numbers.
   b. Specification section and article/paragraph number.
   c. Submittals: type, number, date reviewed, Engineer's comment, as applicable, with appropriate attachments.
2. Stipulated facts and pertinent documents, including photographs and statements.
3. Interpretations relied upon.
4. Description of:
   a. Nature and extent of Claim.
   b. Who or what caused the situation.
   c. Impact to the Work and work of others.
   d. Discussion of claimant's justification for requesting a change to price or times or both.

5. Estimated adjustment in price claimant believes it is entitled to with full documentation and justification.
6. Requested Change in Contract Times: Including, but not limited to:
    a. Progress Schedule documentation showing logic diagram for request.
    b. Documentation that float times available for Work have been used.
    c. Revised activity logic with durations including sub-network logic revisions, duration changes, and other interrelated schedule impacts, as appropriate.
7. Documentation as may be necessary as set forth below for Work Change Directive, and as Resident Engineer may otherwise require.

1.06 WORK CHANGE DIRECTIVES

A. The Work Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the contract Sum or Contract Times.

B. Subsequent to a Work Change Directive issued by AlexRenew to the Contractor under Section 00 70 00, General Conditions, Article 11.03, the Contractor shall:

1. Proceed promptly to execute changes in the Work in accordance with the Work Change Directive.
2. Maintain detailed records on a time and material basis of work required by the Work Change Directive.
    a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

C. Effective Date of Work Change Directive: Date of signature by Owner, unless otherwise indicated thereon.

1.07 SUBMITTALS

A. Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.

C. Promptly revise progress schedules to reflect any changes in Contract Times, revise sub-schedules to adjust time for other items of work affected by the change, and submit.

D. Promptly enter changes in Project Record Documents.

1.08 CHANGE ORDERS

A. Procedure:

1. The Owner will advise of minor changes in the Work not involving an adjustment to Contract Price or Contract Time.
2. The Owner may issue a Proposal Request or Notice of Change which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications. Contractor will prepare and submit an estimate within two (2) days, unless otherwise indicated in the proposal request.
3. The Contractor may propose a change by submitting a request for change to the Owner, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Price and Contract Time with full documentation.
4. Upon the Owner's approval of a Change Order Proposal Request, the Owner will issue a Change Order for signatures of the Owner and Contractor, as provided in the Conditions of the Contract

B. In signing a Change Order, Owner and Contractor acknowledge and agree that:

1. Stipulated compensation (Contract Price or Contract Times, or both) set forth includes payment for:
   a. Cost of the Work covered by the Change Order
   b. Coefficient multipliers for the Work
   c. Interruption of Progress Schedule
   d. Delay and impact, including cumulative impact, on other Work under the Contract Documents
   e. Extended overheads.
2. Change Order constitutes full mutual accord and satisfaction for the change to the Work.
3. Unless otherwise stated in the Change Order, all requirements of the original Contract Documents apply to the Work covered by the Change Order.

1.09 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

A. Maintain detailed records of work done on a time and material or force account basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.

B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.

C. On request, provide additional data to support computations:

1. Quantities and description of products, labor, and equipment;
2. Taxes, insurances and bonds;
3. Overhead and profit;
4. Justification for any change in Contract Time;
5. Credit for deletions from Contract, similarly documented.

D. Support each claim for additional costs, and for work done on a time and material or force account basis, with additional information:

1. Origin and date of claim;
2. Dates and times work was performed, and by whom;
3. Time records and wage rates paid.
4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.10 AS-BUILT CHANGE ORDER

A. The total Bid Price will be determined as the sum of the products of the estimated quantity of each item and the unit price bid.

B. The final Contract Price will be subject to adjustment according to final measured, used, or delivered quantities as stated herein, and the unit prices in the Agreement will apply to such final quantities, except that unit prices will be subject to change by Change Order as stipulated herein.

1.11 REQUEST FOR INFORMATION (RFI) OR CLARIFICATION MEMO

A. Procedures: Pursuant to paragraphs 3.03 and 10.03 of the General Conditions:

1. Contractor: Initiate RFI using the RFI Form or the Owner-Selected Electronic System. Provide information required by Owner- provided form or the Owner-Selected Electronic System:
2. Engineer: Upon receipt of Contractor's written RFI, will:
   a. Promptly review request to determine intent of Contract Documents and clarification necessary.
   b. Notify Contractor promptly if unable to meet Contractor's requested response date and indicate a tentative response date.
   c. Respond to RFI and/or issue a Clarification Memo in accordance with paragraph 10.03 of General Conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CHANGE ORDER BREAKDOWN

A. Contract prices shall be used for Change Order work where work is of similar nature; no other costs, overhead or profit will be allowed.

B. When Contract prices are not appropriate and the nature of the change is known in advance of construction, the parties shall attempt to agree on a fully justifiable price adjustment and/or adjustment of completion time.

C. When Contract prices are not appropriate, or the parties fail to agree on equitable adjustment, or in processing claims, equitable adjustment for Change Order work shall be per this section and shall be based upon the breakdown shown in the following subsections. The Contractor shall assemble a complete cost breakdown that lists and substantiates each item of work and each item of cost.

1. Labor: Payment will be made for direct labor cost plus payroll costs and fee per Article 11.07 of the General Conditions.
2. Bond: Payment for additional bond cost will be made per bond rate schedule submitted to the Owner with the executed Contract.
3. Materials: Payment for cost of required materials will be F.O.B. the job site plus fee per Article 11.07 of the General Conditions.
4. Rented Equipment: Payment for required equipment rented from an outside company that is neither an affiliate of, nor a subsidiary of, the Contractor will be based on receipted invoices per Article 13.01.B.5.c. No additional allowance will be made for overhead and profit. The Contractor shall submit written certification to the Owner that any required rented equipment is neither owned by nor rented from the Contractor or an affiliate of or subsidiary of the Contractor.
5. Contractor's Equipment: Payment for equipment and machinery owned by Contractor or a Contractor-related entity will be paid per Article 13.01.B.5.c. Payment for Contractor equipment made idle by delays attributable to the Owner will be based on one-half the derived rate under this subsection. Approved transportation charges will be paid (one way) from the nearest source if the equipment is brought to the project specifically for use on the change order work and is not to be used on any other work. No additional allowance will be made for overhead and profit.
6. Miscellaneous: No additional allowance will be made for general superintendence, use of individual pieces of equipment or small tools having a replacement value of less than $1,000 and other costs for which no specific allowance is herein provided.

7. Subcontract Work: Payment for additional necessary subcontract work will be based on applicable procedures in 1 through 6. Contractor's and subcontractors' fees limited per Article 11.07 of the General Conditions.
8. Builder's Risk Insurance: Payment for additional contractor builder's risk insurance on change orders will be based on actual additional premiums with no additional fee.

D. If directed, the Contractor shall submit to the Owner three (3) qualified bids for extra or changed work and materials, if similar Work is not being performed at job site. If directed, the Contractor shall submit daily time charges to the Owner each day for Change Order Work.

E. Invoice for work included in the contract pursuant to a change order issued or recognized pursuant may only be submitted to the Owner following the Contracting Officer's issuance of a written modification of the contract price.

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.02 FORMAT

A. Application shall be on forms as supplied by the Owner.

1.03 DEFINITIONS

A. General:

1. Pay Item: An item of work specifically described and for which a price, either unit or lump sum is provided.
2. Pay Item Schedule (Schedule of Prices): A schedule showing the pay item number, the approximately quantity of each pay item, the price bid by the Contractor to be paid for each item of work performed under Contract, the total cost of each item, and the total amount bid by the Contractor.
3. Extra Work: Work other than that required either expressly or implied by the Contract in its executed form.

B. Measurement:

1. Lump-Sum Measurement:
   a. Measurement will be for the entire item, unit of work, structure, or combination thereof, as specified.
   b. Contractor shall show each applicable lump-sum item a fixed definable and measurable quantities where possible and unit prices there for as developed and assigned by the Contractor to the different features of the work. The summation of extensions of quantities and unit prices and related costs shall equal the amount of the lump-sum Contract Price or lump sum bid item indicated in the Bid Schedule of Prices.
   c. Progress payments will be made in accordance with the Contractor's payment-apportioning program and from the approved progress schedule, reflecting the progress which occurred during the payment period.
2. Volume Measurement: Measurement will by the volume dimension indicated in the Bid Schedule of Prices.

3. Area Measurement: Measurement by area will be by the area dimensions as measured in the Field.
4. Linear Measurement: Linear measurement will by the linear dimension and unless otherwise indicated, items, components, or work to be measured on a linear basis will be measured at the centerline of the item in place.
5. Weight Measurement:
   a. Measurement by weight shall be measured by scale or by handbook weights for the type and quantity of material actually furnished and used.
   b. Trucks used to haul material being paid by weight shall be weighed empty daily and each loaded trip. Each truck shall bear a plainly legible identification mark.

1.04 SUBMITTALS

A. Schedule of Values:

1. Submit Preliminary Schedule of Values within fifteen (15) days after the tentative award of the Contract.
2. Submit finalized Schedule of Values within ten (10) days from the approval date of the Overall Construction Progress Schedule.
3. Submit one (1) copy electronically.
4. Submit schedule of values (SOV) on Contractor's standard form in Excel (.xls) format.

B. Application for Payment Procedure:

1. Submit a draft Application for Payment for review. The cutoff date shall be five (5) working days prior to actual application due date or as otherwise agreed.
2. Submit each Application for Payment at time stipulated in Agreement.
3. Submit under transmittal letter.
4. Submit one (1) copy electronically to invoicing@alexrenew.com
5. Each Application for Payment shall include the following items, in order to be considered complete:
   a. On a separate page within each Application for Payment, Contractor shall include a completed version of the following table:

Total Project Cost to-Date by Locality			
Locality	No. of Vendors to-date	Value of Work	Percentage of Value of Work
Alexandria		$	
Northern Virginia (1)		$	
Other Virginia		$	

Maryland		$	
District of Columbia		$	
Non-local		$	
Total		$	%

(1.) Northern Virginia consists of the following Counties: Arlington, Fairfax, Loudoun and Prince William.

b. Monthly Health and Safety.
c. Monthly Quality Control Report; QC Backup for Completed Work.
d. Updated Progress Schedule and Report.
e. Updated Shop Drawing Log.
f. Monthly Job Photos and Videos.
g. Verified information, product certifications, or assurance of compliance.
h. De Minimis updated product documentation, if the De Minimis clause is invoked on the project.
i. Copy of current Insurance Certifications.
j. Copy of Paid Invoices for material stored on-site (if applicable).
k. Copy of Paid invoices for material stored off-site (if applicable).
l. Application and Certificate for Payment.
m. Updated electronic copy of Record Drawings/Red-Line Drawings

6. Each Application for Payment shall be consistent with previous applications and payments as certified by the Contractor and paid by the Owner.
7. Application for Payment at Substantial Completion: After receipt of the Certificate of Substantial Completion, submit an Application for Payment showing 100 Percent completion for portion of the Work claimed as substantially complete minus the value of the punch list items.
8. Final Payment Application: Submit final Application for Payment with releases and supporting documentations not previously submitted and accepted.

1.05 PREPARATION OF APPLICATION

A. Type required information.

B. Execute certification by signature of authorized officer.

C. Use data on Bid Form and approved Schedule of Values. Provide dollar value in each column for each line item for portion of Work performed.

D. List each authorized Change Order and an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.

E. Prepare Application for Final Payment as required in General Conditions.

1.06 CASH ALLOWANCES

A. Consult with Engineer in selection of products or services. Obtain proposals from Suppliers and installers and offer recommendations.

B. Cash allowances will be administered in accordance with Paragraph 13.02 of General Conditions.

C. Submit, with application for payment, invoice showing date of purchase, from whom the purchase was made, the date of delivery of the product or service, and the price, including delivery to the Site and applicable taxes.

1.07 SCHEDULE OF VALUES

A. Format: Type on the Owner-provided forms or approved format.

B. Prepare a separate Schedule of Values for each schedule of the Work under the Agreement.

C. Allocate SOV pay items to Progress Schedule activity numbers.

D. For items on which payments will be requested for stored products, list sub-values for cost of stored products.

E. The Contractor's Schedule of Values shall include allocations for the following administrative and contractually required deliveries and related services required to be provided to the Owner throughout the duration of the contract.

1. Health and Safety: Due before any work may take place in the field and updates are required with each monthly payment application.
    a. Health & Safety.
    b. Monthly Health & Safety Plan.
    c. Injury & Accident Reports.
    d. Monthly Implementation of Health & Safety Program (Maintain Daily - Payment Monthly).
    e. Monthly Site Housekeeping Program (Maintain Daily - Payment Monthly).
2. Quality Control – Due before any work may take place in the field and updates are required with each monthly payment application.
    a. Quality Control Plan.
    b. Monthly Quality Control Report.
    c. Monthly Implementation of Quality Control Program (Maintain Daily - Payment Monthly).

3. Policies, Compliance – Due before any work may take place in the field and updates are required with each monthly payment application.
   a. Copies of Insurance Policies.
   b. Copies of Subcontractors Agreements & the Owner Approval Requests.
   c. Compliance Reports:
      1) MBE/WBE Monthly Report.
      2) Weekly Statement of Wages (Certified Payrolls).
4. Schedule of Values – Due before any work any take place in the field.
   a. Schedule of Values:
      1) Initial – for first 120 days.
      2) Final – tied to the approved Construction Schedule.
5. Progress Schedule – Due before any invoicing may take place and updates are required with each monthly payment application.
   a. Initial Baseline Construction Schedule.
   b. Monthly Schedule Updates and reports (includes progress payments, planned manpower histograms, and construction equipment utilization reports, as applicable).
   c. Revised Baseline Schedules for Approved Time Extensions by Change Orders.
6. Construction Support: Due before any invoicing may take place and updates are required with each monthly payment application:
   a. Construction Permits from Regulatory Agencies.
   b. Pre-Construction Photos, Videos.
   c. Pre-Construction Surveys.
   d. Pre-Construction Notification of Differing Site Conditions.
   e. Construction Permits from Regulatory Agencies.
   f. Monthly Progress Photos, Videos.
7. Construction Reports: Updates are prerequisite to monthly pay applications.
   a. Daily Progress Reports.
   b. Weekly Progress Reports.
   c. Monthly Progress Reports.
8. Submittals for Technical Specifications:
   a. Submittals, Initial - Final Approval:
      1) Delivery Schedule for Technical Submittals Divisions.
      2) Products, Materials and Samples to be utilized in the Work.
      3) Coordinated Layout Drawings.
      4) Shop Drawings.
      5) Calculations.
   b. Training: Milestones in the schedule are established for these Items, and pay application may not be made until these milestones are met. Also, follow on work elements may not be performed until these milestones are satisfied.
      1) O & M Training.
      2) Lesson Plans, Preliminary.

3) Lesson Plans, Final.
4) Training Sessions, Initial.
5) Training Sessions, Follow-on.
6) Final Deliverables.

c. Equipment and System Commissioning: Milestones in the schedule are established for these Items, and pay application may not be made until these milestones are met. Also, follow on work elements may not be performed until these milestones are satisfied.
1) Installation Review(s).
2) Field Testing.
3) Equipment and System Check-out.
4) Operational Demonstration.
5) Performance Certification Testing.

~~9.~~ Project Record Drawings: Milestones in the schedule are established for these Items, and pay application may not be made until these milestones are met.

10. Permits, Spares, Warranties: Milestones in the schedule are established for these Items, and pay application may not be made until these milestones are met. Also, follow on work elements may not be performed until these milestones are satisfied.
a. Regulatory Agency(s) Approvals:
1) Alexandria Fire Department.
2) Alexandria Permit Center - Certificate(s) of Occupancy.
b. Spare Parts Delivery and Turn-over.
c. Warranties: All Extended Warranties Delivered and Approved.

11. All Remaining Deliverables: Final payment will not be made until this milestone is accomplished.
a. Delivery and Turn-over of all Required Final Contract Deliverables.

F. Upon request of Engineer, provide documentation to support the accuracy of the Schedule of Values.

G. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

H. Lump Sum Work:

1. Reflect specified cash and contingency allowances and alternates, as applicable.
2. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, equipment testing, facility startup, and contract closeout separately.
a. Bonds and Project-Specific Insured: Payment shall be based on submitted invoices for premiums directly charged to the Contractor.

b. Mobilization: Payment shall not exceed 2 percent of the total Contract amount and shall be prorated over a minimum of a 4-month period.
c. Contractor Project Administration: Payment shall be based on Contractor-estimated monthly cost for Project administration and all associated costs, payable with each partial payment application. All costs shall be subject to review and approval by the Engineer.

3. Breakdown remainder of Lump Sum Value by Activity ID as shown in the Baseline Schedule.

I. An unbalanced or front-end loaded schedule will not be acceptable.

J. Summation of the complete Schedule of Values representing all the Work shall equal the Contract Price.

K. Submit Schedule of Values in a spreadsheet format compatible with latest version of MSExcel.

L. Action:

1. No payment will be made for work performed on a lump sum contract or a lump sum item until the appropriate Schedule of Values is approved by the Owner.
2. The equitable value of work deleted from a lump sum contract or lump sum item shall be determined from the approved Schedule of Values

1.08 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

A. Within 30 days after the effective date of the Contract, Contractor shall furnish to the Owner a schedule of estimated monthly payments in a form acceptable to the Owner.

1. Provide table of estimated payments by month for entire contract duration aggregating in initial contract price. Table shall be in spreadsheet format compatible with latest version of MSExcel.
2. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the Contract Documents.

B. The sum of all items listed shall equal the Contract Price.

C. The cash flow projection shall be divided into month-by-month cash requirements, and shall be equated or tied to the Contractor’s construction schedule in sufficient detail to indicate realistic costs and expenses for all elements of the project.

D. The schedule shall be revised and resubmitted each time an Application for Payment varies more than 10 percent from the estimated payment schedule.

E. No progress payments will be made until the cash flow schedule has been approved.

1.09 APPLICATION FOR PAYMENT

A. Transmittal Summary Form: Attach one Summary Form with each detailed Application for Payment for each schedule and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor.

B. Application for Payment will be generated by Owner based on the updated schedule submittal and the schedule of values. Form will be provided to Contractor for signature.

C. Provide separate form for each schedule as applicable.

D. Include accepted Schedule of Values for each schedule or portion of lump sum Work and the unit price breakdown for the Work to be paid on a unit price basis.

E. Include separate line item for each Change Order and Work Change Directive executed prior to date of submission. Provide further breakdown of such as requested by Engineer.

F. Preparation:

1. Round values to nearest dollar.
2. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by Engineer.

1.10 MEASUREMENT—GENERAL

A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.

B. Whenever pay quantities of material are determined by weight, weigh material on scales furnished by Contractor and certified accurate by state agency responsible. Obtain weight or load slip from weigher and deliver to Owner's representative at point of delivery of material.

C. If material is shipped by rail, car weights will be accepted provided that actual weight of material only will be paid for and not minimum car weight used for assessing freight tariff, and provided further that car weights will not be acceptable for material to be passed through mixing plants.

D. Vehicles used to haul material being paid for by weight shall be weighed empty daily and at such additional times as required by Engineer. Each vehicle shall bear a plainly legible identification mark.

E. Haul materials that are specified for measurement by the cubic yard measured in the vehicle in transport vehicles of such type and size that actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. Load vehicles to at least their water level capacity. Loads hauled in vehicles not meeting above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.

F. Quantities will be based on ground profiles shown. Field surveys will not be made to confirm accuracy of elevations shown.

G. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and profiles shown on Drawings will be used for determining quantities.

Item	Measurement Parameters
Not Used	**Not Used**

1.11 PAYMENT

A. General:

1. Progress payments will be made monthly.
2. The due date for Contractor's submission of monthly Application for Payment shall be established at the Preconstruction Conference.

B. Payment for all Lump Sum Work shown or specified in Contract Documents is included in the Contract Price. Payment will be based on a percentage complete basis for each line item of the accepted Schedule of Values.

C. Payment for Lump Sum Work covers all Work specified or shown within the limits or Specification sections as follows:

1. Limits of Work are as shown on the Drawings.

2. Limits of Work are as defined in Section 01 11 00, Summary of Work.
3. All Work shown on Drawings and in Specifications.

1.12 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

A. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected material.
2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
4. Material not unloaded from transporting vehicle.
5. Defective Work not accepted by Owner.
6. Material remaining on hand after completion of Work.

1.13 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance data is acceptable to Engineer.

B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.14 PARTIAL PAYMENT FOR UNDELIVERED, PROJECT-SPECIFIC MANUFACTURED OR FABRICATED EQUIPMENT

A. Notwithstanding above provisions, partial payments for undelivered (not yet delivered to Site or not stored in the vicinity of Site) products specifically manufactured for this Project, excluding off the shelf or catalog items, will be made for products listed below when all following conditions exist:

1. Partial payment request is supported by written acknowledgment from Suppliers that invoice requirements have been met.
2. Equipment is adequately insured, maintained, stored, and protected by appropriate security measures.
3. Each equipment item is clearly marked and segregated from other items to permit inventory and accountability.
4. Authorization has been provided for access to storage Site for Engineer and Owner.
5. Equipment meets applicable Specifications of these Contract Documents.

B. Payment of 15 percent of manufacturer's quoted price for undelivered, Project-specific manufactured equipment will be made following Shop Drawing approval. Thereafter, monthly payments will be made based on progress of fabrication as determined by Engineer, but in no case will total of payments prior to delivery exceed 75 percent of manufacturer's quoted price.

C. Failure of Contractor to continue compliance with above requirements shall give cause for Owner to withhold payments made for such equipment from future partial payments.

D. The Owner will subsidize 50 percent of costs associated with mass transit use by the Contractor's workers for those workers who elect to use Metro, DASH, VRE or other forms of public transit to commute to the Project Site. These costs will not be considered as part of lump sum or unit price bid items included in the Contractor's bid.

E. On a monthly basis, the Contractor shall collect receipts from workersutilizing public transit and submit copies with a summary of total costs and the amount to be reimbursed by the Owner. The report shall include a statement certifying that all costs associated with public transit use are solely associated with job-related travel to the Project Site. Reimbursement of the subsidized cost will be made to the Contractor. Contractor will be responsible for distributing payment to his employees. The Owner reserves the right to audit the reimbursement documentation.

F. Documentation shall be submitted with the monthly application for payment as a separate supplemental summary page.

G. All administrative costs associated with payment of reimbursable public transit costs to individual workers shall be borne by the Contractor.

H. Include a monthly tally of workers who have used public transit in the Sustainable Construction Log supplement provided in Section 01 32 00, Construction Progress Documentation.

1.15 PAYMENTS FOR PUBLIC TRANSIT USE

A. The Owner will subsidize 50 percent of costs associated with mass transit use by the Contractor's workers for those workers who elect to use Metro, DASH, VRE or other forms of public transit to commute to the Project Site. These costs will not be considered as part of lump sum or unit price bid items included in the Contractor's bid.

B. On a monthly basis, the Contractor shall collect receipts from workers utilizing public transit and submit copies with a summary of total costs and the amount to be reimbursed by the Owner. The report shall include a statement certifying that all costs associated with public transit use are solely associated with job-related travel to the Project Site. Reimbursement of the

subsidized cost will be made to the Contractor. Contractor will be responsible for distributing payment to his employees. The Owner reserves the right to audit the reimbursement documentation.

C. Documentation shall be submitted with the monthly application for payment as a separate supplemental summary page.

D. All administrative costs associated with payment of reimbursable public transit costs to individual workers shall be borne by the Contractor.

E. Include a monthly tally of workers who have used public transit in the Sustainable Construction Log supplement provided in Section 01 32 00, Construction Progress Documentation.

1.16 SUBSTANTIATING DATA

A. When the Owner requires substantiating information, submit data justifying line item amounts in question.

B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 GENERAL

1.01 SUMMARY

A. Work specified in this Section includes coordination requirements with other contractors at the site and with Owner workforce.

B. Other contractors will be working concurrently at, and adjacent to, the existing AlexRenew Water Resource Recovery Facility (WRRF) site and are to be considered third-party beneficiaries to this Contract in respect to site access and scheduling, and the Contractor is assuming the liability from this contractual relationship. Contractor shall make reasonable adjustments to operations and schedule, as directed by the Owner, to coordinate Work under this Contract with work performed by others at the site.

C. Development of the means and methods for the Contractor's sequence of construction is solely the responsibility of the Contractor.

D. Section specifies administrative and supervisor requirements necessary for Project coordination.

1.02 DEFINITIONS

A. CPT: Centrate Pretreatment.

B. MOPO: Maintenance of Plant Operations.

1.03 WORK BY OWNER AND BY SEPARATE CONTRACTORS

A. The Owner reserves the right to perform work related to the project and to award separate contracts in connection with other portions of the Project or other Work at the site.

B. The Contractor shall attend weekly plant-wide coordination meetings which will review look-ahead schedules for all active projects and scheduled plant-work to facilitate site-wide coordination amongst projects and with plant operations. The intent of the meeting to communicate and coordinate work, including lockout/tagout work, confined space entry, partial road closure requests in advance. Owner or Engineer will prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and distribute copies of minutes within 5 days after each meeting to participants and parties affected by meeting decisions.

C. The Owner reserves the right to add or delete contracts, to modify the scope of contracts, or to modify schedules, any of which are to the benefit of the Owner. The schedule is provided as a tool to assist the Contractor in developing project costs and a project schedule, and to prepare for coordination of Work with the work of other contractors.

D. Mutual Responsibility:

1. Contractor shall afford other contractors and the Owner reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall properly connect and coordinate the Work with that of the Owner, and other contractors to store its apparatus, materials, supplies, and equipment in such orderly fashion at the site of the Work as will not unduly or unreasonably interfere with the progress of the Work or the work of any other contractor.
    a. If the execution or result of any part of the Work depends upon any work of the Owner or of any separate contractor, the Contractor shall, prior to proceeding with the Work, inspect and promptly report to the Owner in writing any apparent discrepancies or defects in such work that render it unsuitable for such proper execution or result of any part of the Work.
    b. Failure of the Contractor to so inspect and report shall constitute an acceptance of the Owner's or separate contractor's work as fit and proper to receive the Work, except as to defects which may develop in the Owner's or separate contractor's work after completion of the Work and which the Contractor could not have discovered by its inspection prior to completion of the Work.
2. Should the Contractor cause damage to the Work or property of any separate contractor on the Project, or to other Work on the Site, or delay or interfere with the Owner's Work on ongoing operations, facilities, or adjacent facilities, or said separate contractor's Work, the Contractor shall be liable for the same; and, in the case of another contractor, the Contractor shall attempt to settle said claim with such other contractor prior to such other contractor's institution of litigation or other proceedings against the contractor.
3. If such separate contractor sues the Owner on account of any damage, delay, or interference caused by the Contractor, the Owner shall notify the Contractor, who shall defend the Owner in such proceedings at the Contractor's expense. If any judgment or award is entered against the Owner because of the actions or inaction of the Contractor, the Contractor shall satisfy the same and shall reimburse the Owner for all damages, expenses, attorney's fees, and other costs which the Owner incur as a result thereof.

4. Should a separate contractor cause damage to the Work or to the property of the Contractor, or cause delay of interference with the Contractor's performance of the Work, the Contractor shall present directly to said separate contractor any claim it may have as a result of such damage, delay, or interference (with an information copy to the Owner), and shall attempt to settle its claim against said separate contractor prior to the institution of litigation or other proceedings against said separate contractor.
    a. In no event shall the Contractor seek to recover such damages from the Owner. The Contractor hereby warrants to the Owner that it will not seek to recover any costs, expenses (including, but not limited to, attorney's fees) or damages or other losses incurred by the Contractor as a result of any damage to the Work or property of the Contractor or any delay or interference caused by any separate contractor.
    b. In order to carry out the intent of this Section, the Contractor agrees that privities of contract exists between Contractor and any separate contractor, as defined herein, for the purpose of disposing of the liabilities of obligations which are imposed upon said parties to each other as specified in this Section; and Contractor agrees to accept service of process and to sue and be sued in Contractor's own name in a litigation which may arise between Contractor and any separate contractor.

E. Coordination of the Work: By entering into this Contract, Contractor acknowledges that there may be other contractors on the site whose work requires coordination with that of its own. Contractor expressly warrants and guarantees that he will cooperate with other contractors and will do nothing to delay, hinder, or interfere with the work of other separate contractors, or the Owner. The Contractor also expressly agrees that, in the event its Work is hindered, delayed, interfered with, or otherwise affected by a separate contractor, its sole remedy will be a direct action against the separate contractor as described in this Section. Contractor will have no remedy, and hereby expressly waves any remedy, against the Owner on account of delay, hindrance, interference, or other event caused by separate contractor.

1.04 SUBMITTALS

A. Staff Names: Within 5 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

1. Provide electronically to the Owner.
2. Post copies of the list in the field office, as applicable.

B. Shutdown Period and/or Cut-In Schedule requests.

C. Lockout/Tagout requests.

D. Partial or Full Road Closure requests.

E. List of Scheduled Site Deliveries (24 hours in advance).

F. Contractor's Daily Reports.

1.05 RELATED WORK AT SITE

A. General:

1. Work is required within an active portion of an existing waste water treatment plant. The available construction working area is limited. The plant must remain in operation and cannot be completely shut down, except for limited outages described in the Contract Documents. The Owner must have access to all plant operational areas. Work must be coordinated with the Owner to allow plant operations.
2. Other work that is either directly or indirectly related to scheduled performance of the Work under these Contract Documents, listed henceforth, is anticipated to be performed at Site by others. Coordinate the Work of these Contract Documents with work of others as including but not limited to those specified in General Conditions.

1.06 UTILITY NOTIFICATION AND COORDINATION

A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during the Work.

1. Electricity Company: Dominion Virginia Power.
   a. Telephone: 888-667-3000.
2. Telephone Company: Verizon.
   a. Telephone: 800-837-4966.
3. Water Department: Virginia American Water Company.
   a. Telephone: 703-549-0909.
4. City of Alexandria Department of Transportation and Environmental Services.
   a. Telephone: 703-838-4966.
5. Gas Company: Washington Gas.
   a. Telephone: 703-750-1000.

1.07 PROJECT MILESTONES

A. Project Milestones: Generally described in Section 00 52 00, Agreement.

1.08 HAZARDOUS LOCATIONS

A. General: When construction activities require working in hazardous locations, all Work shall be carried out in accordance with OSHA Regulations.

1.09 FACILITY OPERATIONS

A. Continuous operation of the Owner's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.

B. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of the Owner's operations.

C. When necessary, plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items to maintain continuous operations of the Owner's facility.

D. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems, except as specifically required by the Contract Documents and after authorization by the Owner and Engineer. Such authorization will only be considered as part of a Plant Impact Request submission.

E. Process or Facility Outages:

1. The following shall require shutdown at some time during the Work:
    a. MCC 69-1A in Building 69 may be taken out of service for a maximum of 8 hours per day for 5 days. Outages shall be confined to 4 PM to 4 AM. Bus B must be in service. Contractor shall provide temporary heating for the duration of any outages.
    b. MCC 69-1B in Building 69 may be taken out of service for a maximum of 8 hours per day for 5 days. Outages shall be confined to 4 PM to 4 AM. Bus A must be in service. Contractor shall provide temporary heating for the duration of any outages.
    c. Outage of domestic water supply to Building 69 shall be confined to a single outage of a maximum of 8 hours in duration.

F. Install and maintain bypass facilities and temporary connections required to keep Owner's operations on line. Sequences other than those specified will be considered upon written request to the Owner and Engineer, provided they afford equivalent continuity of operations.

G. Do not proceed with Work affecting a facility's operation without obtaining Owner's advance approval of the need for and duration of such Work through the Plant Impact Request Process.

H. Process or Facility Outages:

1. The following shall require shutdown at some time during the Work:

I. Relocation of Existing Facilities:

1. During construction, it is expected that minor relocations of Work will be necessary.
2. Provide complete relocation of existing structures and Underground Facilities, as applicable, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.
3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
4. Perform relocations to minimize downtime of existing facilities.
5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by Engineer.

1.10 ADJACENT FACILITIES AND PROPERTIES

A. Examination:

1. After Effective Date of the Agreement and before Work at Site is started, Contractor and Owner, as applicable, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation:

1. Record and submit documentation of observations made on examination inspections in accordance with Section 01 32 33, Construction Photographs.
2. Upon receipt, Engineer will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office.
3. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor’s operations, and is for the protection of adjacent property owners, Contractor, and Owner.

1.11 PROJECT TASKS

A. General

1. Major tasks have been identified for the Owner's purposes. Although all Work is not listed herein, the tasks listed shall be understood to include all accompanying tasks such as, but not limited to, sitework, interconnecting utilities and associated infrastructure, and applicable temporary provisions necessary to sequence the Work. Temporary provisions shall include pipeline endcaps, other utility terminations, and temporary utilities as necessary to allow operation of portions of the Work prior to completion of other portions of the Work, consistent with the Contractor's sequence of operations, although such provisions are not shown.
2. Task 1 - Mobilization:
    a. Obtain required permits, posting notices, establish safety and quality programs.
    b. Install erosion control measures.
    c. Install staging areas.
    d. Install Contractor's field office and temporary utilities.
3. Task 2 - Prepare Building 69 Existing Assets:
    a. Protect assets that will be retained, including:
        1) Existing piping, valves, instrumentation, tanks, stairs, doors, windows, panels, conduits, MCC.
    b. Refurbish or replace selected existing products including:
        1) Replace CPT Mixers 1 and 2 in-kind.
        2) Refurbish Mixer 3, Heat Exchanger 1 and 2, Heat Exchanger Pump 1 and 2, and CPT Reactor Drain Pump.
        3) Upgrade the Multiparameter Composition Sensors Systems.
    c. Clean and flush new and retained pipes, valves, instrumentation, and other accessories within the limits of Building 69, including the following lines:
        1) Dewatering centrate.
        2) Air low pressure.
        3) Recycles.
        4) Plant (W3)/potable (W1)/and non-potable(W2) water.
        5) Centrate pretreatment effluent.
        6) Heat-exchanger recycle.
        7) Process and line drains.
        8) Chemicals.
4. Task 3 - Building 69 Selective Demolition:
    a. Selected equipment and associated piping, electrical, instrumentation, conduit, wiring and controls accessories/appurtenances, including:
        1) Five CPT blowers (Turbo Blowers).
        2) Aeration diffuser systems in the CPT reactors.
        3) Three CPT Recycle pumps (Submersible Pumps).

4) Two CPT decanters.
5) Two foam control boxes.
6) One Heat Exchanger.
7) One Heat Exchanger Pump.

5. Task 4 - Architectural:
   a. Modify stair access to mezzanine level, including relocating existing aluminum stair and handrails, providing new sections of handrails.
   b. Cap two abandoned roof louvers.
   c. Repair masonry and brick work around two new openings for exhaust ductwork on the East elevation.
   d. New and update signage.
   e. Fireproof penetrations through fire-rate walls and slabs
6. Task 5 - Structural:
   a. Two new openings and access doors above each of the CPT reactors.
   b. Mezzanine extension- a steel structure with a concrete slab, drains, handrails and equipment pads.
   c. Two openings for relocated exhaust ductwork on the East elevation.
   d. Equipment pads for three CPT Blowers, CPT Wash-Press, two Recycle Pumps, two Parabolic Wedge-Wire Screens.
   e. New or larger openings through new and existing slabs and walls for new pipes and instrumentation stilling wells (11) in CPT Reactors.
7. Task 6 - Process Mechanical: Integrate new equipment, piping, valves, supports and piping accessories with existing equipment/systems.
   a. Two CPT Influent Screens (Externally Fed Rotary Screens).
   b. One CPT Wash-Press.
   c. Three CPT blowers (Rotary Screw Positive Displacement).
   d. Flat-aeration diffuser systems in the CPT reactors- including depressurization and purge-eductor lines.
   e. Two Parabolic Wedge-Wire Screens above the CPT reactors.
   f. Two CPT Recycle pumps (Submersible Pumps).
   g. Internal Solids Settling Devices (ISSD) in the CPT reactors.
   h. Plant Water (W3) service updates, including hose-bid, and spray/flushing water connections.
   i. Two CPT Micronutrient (MNU) Pumps (one installed and one shelf spare).
   j. Two CPT chemical injectors for MNU and sodium hydroxide.
8. Task 7 - Building Services:
   a. Relocate one exhaust fan, and replace one exhaust fan, associated ducts, electrical and instrumentation.
   b. HVAC exhaust balancing.
   c. New and relocated floor-drains on the mezzanine and ground level.

9. Task 8 - Electrical and instrumentation: Motor Control Center modifications, power and control wiring associated with modified Process Mechanical and HVAC equipment, and associated valves and instrumentation:
    a. One CPT Wash-Press.
    b. Three CPT blowers (Rotary Screw Positive Displacement), including data link to SCADA.
    c. Flat-aeration diffuser systems in the CPT reactors.
    d. Two Parabolic Wedge-Wire Screens above the CPT reactors.
    e. Two CPT Recycle pumps (Submersible Pumps).
    f. Multiparameter Composition Sensors Systems, including data link to SCADA.
10. Task 9 - Clean water testing.
11. Task 10 - CPT Seeding and Operational Demonstration.
12. Task 11 - Final Sitework.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect Materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items. Provide written documentation to the Owner all of Water supplied damaged materials.

D. Provide attachment and connection devises and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Owner for final decision.

F. Recheck measurements and dimensions, before starting each installation.

G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed

construction from incompatible materials as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering complete construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Owner for final decision.

3.02 OUTAGE LIMITATIONS

A. The Contractor shall perform the Work under this Contract to meet the specified time given in the Contract Documents. All Work shall be scheduled and proceed in such sequence as to avoid interference and delays to normal WRRF operations.

B. During the performance of the Work, the Contractor may need to temporarily interrupt the normal operations of portions of the existing facilities in order to drain, fill, disconnect and reconnect certain items of equipment, piping, conduits, electrical service, and other facilities.

C. In order to keep a minimum any interference with proper operation of the existing facilities, such disconnections and reconnections shall be made only at such times and in such manner as approved by the Owner in writing. The Contractor shall be prepared to fully operate on a 24-hour per day basis with no additional compensation in order to comply with the limitations as specified herein.

D. The requirements included herein are necessary to minimize conflicts with ongoing plant operations and other working contracts in the immediate vicinity. Whether or not such work being performed by others is indicated on the Drawings, the Contractor shall make such reasonable adjustments in his operations and schedules as the Owner may direct for the purpose of coordinating his work with that in progress by others.

E. All roadways affording ingress to and egress from the work area shall be maintained in service and kept free of obstructions at all times.

F. The Contractor shall submit requests for outages and shutdowns per a Plant Impact Request as specified in Section 01 11 00, Summary of Work.

G. Construction of the facilities under this project will be ongoing simultaneously with the daily routine operations of the plant.

3.03 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection damage or deteriorating at Substantial Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

3.04 DAILY REPORT

1. Contractor shall make Contractor's Daily Reports: A daily written and verbal report to the Owner advising of the status of the Work, the prior day's accomplishments, activity planned for the current day and for at least 2 subsequent days, and any problems or delays that may be anticipated.

3.05 CUTTING, FITTING, AND PATCHING

A. Cut, fit, adjust, or patch Work and work of others, including excavation and backfill as required, to make Work complete.

B. Obtain prior written authorization of Engineer before commencing Work to cut or otherwise alter:

1. Structural or reinforcing steel, structural column or beam, elevated slab, trusses, or other structural member.
2. Weather-resistant or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Work of others.

C. Refinish surfaces to provide an even finish.

1. Refinish continuous surfaces to nearest intersection.
2. Refinish entire assemblies.
3. Finish restored surfaces to such planes, shapes, and textures that no transition between existing work and the Work is evident in finished surfaces.

D. Restore existing work, Underground Facilities, and surfaces that are to remain in completed Work including concrete-embedded piping, conduit, and other utilities as specified and as shown on Drawings.

E. Make restorations with new materials and appropriate methods as specified for new Work of similar nature; if not specified, use recommended practice of manufacturer or appropriate trade association.

F. Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces and fill voids.

G. Remove specimens of installed Work for testing when requested by Engineer.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.01 GENERAL

A. Engineer will schedule physical arrangements for meetings throughout progress of the Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 5 days after each meeting to participants and parties affected by meeting decisions.

1.02 PRECONSTRUCTION CONFERENCE

A. Contractor shall be prepared to discuss the following subjects, as a minimum:

1. Required schedules.
2. Status of Bonds and insurance.
3. Sequencing of critical path work items.
4. Progress payment procedures.
5. Project changes and clarification procedures.
6. Use of Site, access, office and storage areas, security and temporary facilities.
7. Major product delivery and priorities.
8. Contractor’s safety plan and representative.
9. Sustainable Construction Log and related requirements.
10. Critical structures (special inspections).

B. Attendees will include:

1. Owner’s representatives.
2. Contractor’s office representative.
3. Contractor’s resident superintendent.
4. Contractor’s quality control representative.
5. Subcontractors’ representatives whom Contractor may desire or Engineer may request to attend.
6. Engineer’s representatives.
7. Others as appropriate.

1.03 PRELIMINARY SCHEDULES REVIEW MEETING

A. As set forth in General Conditions and Section 01 32 00, Construction Progress Documentation.

1.04 PROGRESS MEETINGS

A. Engineer will schedule regular progress meetings at Site, conducted weekly to review the Work progress, Progress Schedule, Schedule of Submittals, Application for Payment, contract modifications, and other matters needing discussion and resolution.

B. Attendees will include:

1. Owner's representative(s), as appropriate.
2. Contractor, Subcontractors, and Suppliers, as appropriate.
3. Engineer's representative(s).
4. Others as appropriate.

1.05 QUALITY CONTROL MEETINGS

A. In accordance with Section 01 45 16, Contractor Quality Control.

B. Scheduled by Engineer on regular basis and as necessary to review test and inspection reports, and other matters relating to quality control of the Work and work of other Contractors.

C. Attendees will include:

1. Contractor.
2. Contractor's designated quality control representative.
3. Subcontractors and Suppliers, as necessary.
4. Engineer's representatives.

1.06 PREINSTALLATION MEETINGS

A. When required in individual Specification sections, convene at Site prior to commencing the Work of that section.

B. Require attendance of entities directly affecting, or affected by, the Work of that section.

C. Notify Engineer 4 days in advance of meeting date.

D. Provide suggested agenda to Engineer to include reviewing conditions of installation, preparation and installation or application procedures, and coordination with related Work and work of others.

1.07 COMMISSIONING MEETINGS

A. Schedule and attend a minimum of six facility startup meetings. The first of such meetings shall be held prior to submitting testing plans, as specified in

Section 01 91 00, Equipment Systems Commissioning, and shall include preliminary discussions regarding such plans.

B. Agenda items shall include, but not be limited to, content of testing and commissioning plants, coordination needed between various parties in attendance, and potential problems associated with startup.

C. Attendees will include:

1. Contractor.
2. Contractor's designated quality control representative.
3. Subcontractors and equipment manufacturer's representatives whom Contractor deems to be directly involved in facility startup.
4. Engineer's representatives.
5. Owner's operations personnel.
6. Others as required by Contract Documents or as deemed necessary by Contractor.

1.08 SITE COORDINATION MEETING

A. The CM will schedule regular site-wide coordination meetings at the Site, conducted to review site-wide and project specific coordination of schedules, hoisting, road closures, lockout/tagout, testing, issues and concerns.

B. Attendees will include:

1. Owner's representative(s), as appropriate.
2. Operations and Maintenance representative(s), as appropriate.
3. Contractor Project Manager, including Subcontractors, as appropriate.
4. Owner's Resident Engineer.
5. Others as appropriate.

1.09 SITE SAFETY MEETING

A. The CM Safety Manager will schedule regular safety meetings at the Site, conducted to review site-wide and project specific safety observations, treads, successes, issues and concerns.

B. Attendees will include:

1. Owner's representative(s), as appropriate.
2. Contractor Project Manager and Site Safety Officer, including Subcontractors, as appropriate.
3. Others as appropriate.

1.10 OTHER MEETINGS

A. Coordination meetings with Other Onsite Contractors: Engineer will schedule regular coordination meetings to coordinate Work among the various onsite contractors. Meetings will be bi-weekly or as determined by the Engineer.

B. In accordance with Contract Documents and as may be required by Owner and Engineer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall prepare and maintain a detailed progress schedule, herein referred to as the "Preliminary Schedule" and the "Contractor's Construction Schedule," as described below. This schedule shall be the Contractor's working schedule and used to plan, organize, and execute the work, record and report actual performances and progress, and show how the Contractor plans to complete all remaining work as of the end of each progress report period, and to enable the Owner to monitor, compute the value of progress payments and evaluate work progress.

1.02 DEFINITIONS AND ABBREVIATIONS

A. TIMELY AND ACCEPTABLE shall mean any construction schedule or schedule update required under the contract which is submitted in accordance with all the requirements set forth in the contract. The determination whether a schedule is timely and acceptable shall be the sole judgment of the Owner.

B. The schedule shall be in the form of an activity-oriented network diagram (Critical Path Method) and the principles and definitions of the terms used herein shall be as set forth in the Associated General Contractors of America (AGC) publication The Use of CPM in Construction. In the event of discrepancies, this section shall govern the development and utilization of the progress schedule;

C. The Primavera P6 Scheduling System version 16.0, or higher, shall be used for all scheduling requirements defined in this specification. Schedule updates and revisions shall be submitted on magnetic disc and on four printed copies as specified hereunder. CONTRACTOR may use Microsoft ® Project to complete the schedule for this Project.

D. Qualifications:

1. At the Preconstruction Meeting, the Contractor shall provide a statement to the Owner describing its computerized scheduling capability for review and approval. This statement shall include the following as a minimum:
    a. Identification, qualifications, and experience of the members of the Contractor's scheduling staff or any consultant's staff. The designated scheduling the Owner shall have at least 3 years’

experience in the computerized scheduling of public or industrial construction work.

b. Reference of not less than two previous projects on which the Contractor or consultant has satisfactorily utilized computerized CPM scheduling, preferably of not less than one-half of the value of the present Contract. The Owner reference shall be included.

2. The Owner may reject any member of the Contractor's scheduling staff or any of its consultant's staff for lack of competence. The Contractor shall promptly replace rejected personnel with acceptable personnel at no additional cost to the Owner. The new personnel shall comply with the qualifications listed above.

E. Failure to Perform:

1. For the purpose of this Contract, the terms "timely" and "acceptable schedule" shall mean any Preliminary and/or Construction schedules or schedule updates thereafter required under the Contract which are submitted in accordance with all requirements set forth in the Contract. The determination whether a schedule is timely and acceptable shall be within the sole judgment of the Owner.
2. The Owner will use the Contractor's Preliminary Schedule and subsequently, the Contractor's Construction Schedule to monitor the value of work performed the value of work remaining, and the Contractor's compliance with the Contract Completion Date and any Milestones. In the event the Contractor fails to submit a timely and acceptable construction schedule, any work performed thereafter shall be undertaken at the Contractor's own risk. A failure to provide a timely and acceptable schedule constitutes a material breach of this Contract. The Owner therefore reserves all rights and remedies available to it upon the Contractor’s failure to submit a timely and acceptable schedule including, but not limited to, default termination, a stop work order (at no cost to the Owner) and/or a withholding of partial progress payments. A decision by the Owner to permit work to proceed shall not be construed as a waiver by the Owner of any or all of its rights and remedies.
3. In the absence of a timely and acceptable schedule: (1) the Owner is not obligated to determine the impact of delays to the project, (2) the Contractor is not entitled to an equitable adjustment pursuant to Article 3 "Changes" of the General Provisions of the Standard Contract Provisions based upon delays and (3) the Owner is not obligated to abide by the requirements of the fifth full Paragraph of Article 5 "Termination-Delays" of the General Provisions of the Standard Contract Provisions, beginning with the words "The Owner shall ascertain", but may presume, notwithstanding the provisions of Article 5, that the Contract is responsible for any anticipated or actual failure to

complete the work within the time specified in the Contract, or any previously granted extensions thereof. A schedule, which has not been accepted in accordance with all requirements set forth in the Contract, may not be used by the Contractor as a basis for requesting equitable adjustments or partial progress payments.

F. EXCUSABLE DELAY: Any delay of the completion of the work beyond the expiration of the Contract Time caused by conditions beyond the control and without the fault or negligence of the Contractor such as strikes, embargoes, fire, unavoidable casualties, unusual delays in transportation, national emergency, and abnormally inclement weather conditions. An Excusable Delay may entitle the Contractor to an extension of the Contract Time but shall not entitle the Contractor to any adjustment to Contract Price.

G. COMPENSABLE DELAY: Any delay of the completion of the work beyond the expiration date of the Contract Time caused by gross negligence or willful acts of the Owner or Owner's Representative, or by the Owner's consultants or Separate Contractor (if any), and which delay is unreasonable under the circumstances involved and not within the contemplation of the parties. A Compensable Delay may entitle the Contractor to an extension of the Contract Time, and/or an adjustment of the Contract Sum. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay, interruption, hindrance or disruption.

H. INEXCUSABLE DELAY: Any delay of the completion of the work beyond the expiration of the Contract Time resulting from causes other than those listed in the above paragraphs.

1.03 SCHEDULE COORDINATION

A. Project is divided into multiple prime contracts with each contract awarded separately. Construction Coordinator, as designated in the Supplementary Conditions, will be responsible for developing and maintaining a master Progress Schedule using individual Progress Schedules prepared by each Contractor as submitted to Engineer under this section.

B. Upon review and acceptance, Engineer will transmit one hard copy and one electronic copy of all Contractors' schedules to Construction Coordinator. Within 5 days of receipt, Construction Coordinator shall prepare and transmit to Engineer one hard copy of master Progress Schedule for each designated Contractor and one hard copy for Engineer.

C. Where Contractor is referred to in the singular, it shall refer to each of separate Contractors as applicable.

1.04 PRELIMINARY PROGRESS SCHEDULE

A. At the Preconstruction Conference, the Contractor shall submit for approval a preliminary schedule, a supporting narrative and a separate tabulation of cumulative payments. The preliminary schedule shall include all activities the Contractor intends to undertake within the first 120 calendar days after the Notice to Proceed. The Contractor's general approach for the balance of the Project shall be indicated. Cost of activities expected to be completed within the first 120 calendar days of Notice to Proceed shall be included and will be used as a basis for payment. The submittal will not be approved unless it is complete as specified and represents a realistic approach to the Work.

B. The Owner will review and comment on the Preliminary Schedule submittal within 10 days. Upon receipt of the Owner's comments, the Contractor shall make necessary changes and deliver the corrected Preliminary Schedule submittal within 10 calendar days.

C. The Preliminary Schedule shall be in the form of an activity-oriented network diagram and shall meet all contractual requirements, such as Contract duration, phases, and phasing restraints.

1. The Preliminary Schedule shall cover the following:
    a. Procurement - Submittals, approvals, fabrication, and delivery of all key and long lead time procurement activities;
    b. The activities to be accomplished during the first 120 calendar days of the Project, including any phases or sub phases.
    c. Activity descriptions shall be brief but shall clearly convey the scope of work described. Activities shall be discrete items of work that must be accomplished under the contract and which, when complete, produce definable, recognizable entities or stages within the project. All activities, including work associated with Contract deliverables, shall be shown. Generally, for activities requiring the Owner’s' approval, durations shall not be less than 30 calendar days for a single review. Unless otherwise approved by the Owner, construction activities shall have durations of 20 working days or less. Non-construction activities such as procurement and fabrication may have longer durations.
    d. All durations shall be the result of Contractor's definitive labor and resource planning under contractually defined on-site work conditions by the Contractor to perform its responsibilities and contracted work.
2. The Narrative Report shall describe the Contractor's general approach for meeting the interim and final completion dates.
3. A Separate Tabulation of Estimated Cumulative Payments will serve as the basis for progress payments up to the first 120 calendar days

following the Notice to Proceed on the Contract and shall include the following information for each 30-day period covered by the Preliminary Schedule:

a. For each activity to be completed in each 30-day period the activity number, description, scheduled start date, scheduled completion date and the monetary value shall be provided;
b. The total of the monetary values of all activities scheduled to be completed during each 30-day period;
c. The cumulative total of the monetary values of all activities scheduled to be completed from the Notice to Proceed to the end of each 30-day period;

D. Summary activities which are necessary (not included under the paragraph (1.b), above) to properly show:

1. The approach to scheduling the remaining work areas or phases of the Project. The work for each phase or area must be represented by at least one summary activity so that the work cumulatively shows the entire Project schedule including, but not limited to the following:

a. Notice to Proceed.
b. Permits.
c. Submittals, with review time. Contractor may use Schedule of Submittals specified in Section 01 33 00, Submittal Procedures.
d. Early procurement activities for long lead equipment and materials.
e. Initial Site work.
f. Earthwork.
g. Specified Work sequences and construction constraints.
h. Contract Milestone and Completion Dates.
i. Owner-furnished products delivery dates or ranges of dates.
j. Major structural, mechanical, equipment, electrical, architectural, and instrumentation and control Work.
k. System startup summary.
l. Project closeout summary.
m. Demobilization summary.

2. Approximate cost and duration for each summary activity, which is the Contractor's best estimate for all the work represented.
3. Realistic delivery dates for all procurement activities required and specified.

E. Approval of Contractor's Preliminary Schedule is a prerequisite to receipt of the initial progress payment.

F. Computer outputs as described in Sections titled “Submittals of Schedules” and “Schedule Updates” shall be required as part of the Preliminary Schedule submittal and each update thereafter.

G. Specification Sections titled Revisions to Approved Schedule,” Change Orders and Time Extensions,” and Delays and Time Extension “shall be applicable to the Preliminary Schedule and its updates thereafter.

1.05 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. The Contract Time includes the time needed by the Contractor for preparation and approval of shop and working drawings, obtaining licenses, certificates, approvals and permits, procurement and assembly of equipment and materials needed for satisfactory completion of all work.

B. The Contractor shall prepare and submit for approval the Contractor's Construction Schedule, a schedule of anticipated payments based upon both early finish and late finish of all activities and a narrative describing the Contractor's approach for meeting the interim and final completion dates to the Owner within 20 calendar days after the Notice to Proceed. The Contractor's Construction Schedule shall be composed of the Detailed Network Diagram, as described in Subsection titled “Detailed Network Diagrams;” the reports described in Subsection titled “Submittals of Schedules;” and all other reports described in subsequent Subsections and shall be cost loaded in accordance with Subsection titled “Cost Loading and Cash Flow.”

C. The Construction Schedule shall include time for the activities in the Detailed Network Diagram.

D. The Construction Schedule shall include time for Owner’s review of submittals with durations of these review periods included herein.

E. The Contractor’s Construction Schedule shall account for the schedule and site constraints in Section 01 10 00, General Requirements, Section 01 11 00, Summary of Work, and Section 01 31 13, Project Coordination.

F. The Contractor's Construction Schedule shall show the sequence and interdependence of activities required for complete performance of all the work. The Contractor's Construction Schedule shall begin with the date the Owner issues the Notice to Proceed, include an activity representing attainment of Beneficial Occupancy in accordance with Section 01 71 16, Beneficial Occupancy, and conclude with an activity representing Final Completion of the Contract.

G. The Contractor will be allowed to submit for approval a shortened schedule showing Contract completion earlier than the date of Final Completion of the Contract. If the shortened schedule is approved by the Owner, the date of Final Completion of the Contract will be revised to the completion date of the approved schedule by the Owner and all Contract provisions such as liquidated damages, etc. will be applicable as of the revised Contract completion date.

H. Float or slack time is not for the exclusive use or benefit of either the Owner or the Contractor, but is a resource available to both parties, as needed, to meet Contract milestones and the Contract completion date. The Contractor's Construction Schedule shall reflect the sequencing and staging requirements stated in the Contract Documents.

I. Seasonal weather conditions shall be considered and included in the planning and scheduling of all work influenced by high or low ambient temperatures and/or precipitation to ensure completion of all Work with the Contract Time.

1. Seasonal weather conditions shall be determined by an assessment of average historical climatic conditions based upon the preceding 5-year records published for the locality by the National Ocean and Atmospheric Administration (NOAA) and entitled, “Local Climatological Data – City of Alexandria”.

J. Comments made by the Owner on the Contractor's Construction Schedule during review will not relieve the Contractor of compliance with requirements of the Contract Documents. Review of the Contractor's Construction Schedule, by the Owner, is for general conformance with the schedule concept of the Project and to determine that the Contractor is in compliance with the information given elsewhere in the Contract Documents. The Owner's initial review will require 30 calendar days. Subsequent reviews will require 15 calendar days. Upon the Owner's request, the Contractor shall participate in the review of the Contractor’s Construction Schedule submissions. All revisions shall be submitted within 15 calendar days after the Owner's review.

K. The approved schedule, unless subsequently changed with the approval or at the direction of the Owner, is the schedule to be used by the Contractor for planning, scheduling, managing and executing the work to be accomplished.

L. The Owner may elect to stop the Contractor from proceeding with Contract work after the first 120 calendar days of the Contract until the Contractor's Construction Schedule submittal is approved. Prior to 120 calendars days after the Notice to Proceed, and until approval of the Contractor's Construction Schedule submittal, progress payments will be based on the Preliminary Schedule submittal.

M. If, through no fault of the Owner or its representatives, the Contractor's Construction Schedule is not approved within the first 120 calendar days of the Contract and the Contract work is suspended in accordance with Paragraph F above, the Owner will hold the Contractor liable for any fines imposed by the USEPA against the Owner for permit violations that occur as a result of the suspension of the Work.

N. The Contractor's Construction Schedule shall begin with the anticipated date of the Notice to Proceed, which will be revised to reflect the actual date of the Notice to Proceed and conclude with an activity representing Final Completion of the Contract.

1.06 SUBMITTAL OF SCHEDULES

A. Following completion of each monthly progress review meeting or in no case later than the 25th of each month, four (4) copies and one (1) original of the Network Diagram of the Contractor's Construction Schedule shall be submitted to the Owner. The submittal shall include electronic copies and tabular reports.

B. The following computer outputs shall be required as part of the initial schedule submission and each update thereafter:

1. All activities sorted by activity number and also including precedent and successor relationships, lag, and lead-time. Each listing shall show activity number description, location, responsibility, total duration in working days, early-start date, late-start date, early-finish date, late-finish date, total float, free float, and status (whether critical or completed) for each activity in the Network Diagram;
2. Activity sort by the amount of slack or float, then in order of preceding event number;
3. Activity sort by early start for next 60 working days, then in order of preceding event number;
4. Activity sort by late finish for next 60 working days, then in order off preceding event number.
5. Milestones status report to include current status of each milestone events.
6. Activity Responsibility sorted by early-start and float. The Activity Responsibility listing shall segregate into separate sub listings:
    a. Work activities for the Contractor;
    b. Work activities of each subcontractor;
    c. Submittals to the Owner for all major items of material and equipment.
    d. Each activity shall list the number of shifts, crew size of each craft, and construction equipment to accomplish the activity;

7. A sub listing of materials and equipment sorted by Specification number. The sub listing of materials and equipment shall include the following activities:
    a. Preparation of shop drawings and submittal to the Owner;
    b. Review by the Owner;
    c. Fabrication and/or delivery of material and/or equipment.

C. Outputs (A) and (B) above shall show all activities and restraints for the duration of the Project.

D. All updated or revised schedules submitted after the original schedule shall be in the same submittal format unless modified in writing by the Owner.

1.07 PROGRESS REPORTS

A. Update pertains to past activities. Logic calculation configurations should be consistent throughout the project.

1. Use retained logic option.
2. Calculate start to start lag by using Early Start option.
3. Calculate Early Start using Contiguous activity duration option.
4. Calculate total float using most critical option.

B. Once each week, on a date established by the Owner, the Contractor shall submit a computerized labor/construction equipment report and progress schedule listing the activities completed and in progress for the previous week and activities scheduled for the succeeding two weeks. This report and schedule shall include concrete placements, major equipment installation, testing, and like detail. A simple histogram and bar chart shall be used to display the information in pictorial form. In addition, a detailed list of all proposed schedule changes (logic revisions, remaining duration status, actual starts, actual finish, and activity additions and deletions).

1. The weekly report shall be complete and accurate, revealing the Contractor's plan of prosecuting the work to meet all Contact stipulated milestones. Upon the Owner's request, the Contractor shall participate in the review of the weekly report submission.

C. Once each month, on a date established by the Owner, a meeting to review the monthly schedule status will be held. The purpose of this meeting is to review the current status of activities to determine completion status and to determine progress payments. The meeting shall be attended by a duly authorized representative of the Contractor and those subcontractors determined to be necessary by the Owner and/or Contractor.

D. Prior to the monthly review meeting, the Contractor shall obtain from his subcontractor's, consultants, and suppliers the necessary information required to reflect progress to date. An updated schedule shall be avail-able for review at the meeting including all information available as of the cut-off date established by the Owner. A detailed list of all schedule changes (logic duration status, additions, and deletions) shall be submitted with the update.

E. The Contractor shall come to the monthly updating meetings with the above data prepared in advance to provide, as of the end of the updating period, a complete and accurate report of current procurement and construction progress, showing how the Contractor plans to continue the work of this Project to meet all Contract completion dates.

F. The monthly Progress reports shall be submitted in the format described herein shall include, at a minimum:

1. For activities started and/or completed during the previous period: actual start and actual completion dates, number of work days, number of shifts, crew sizes by craft, and construction equipment used to accomplish the activity;
2. For activities begun but not yet completed: the actual start date, physical percentage complete to date, number of shifts, crew sizes by craft, construction equipment required, the remaining duration of the work, and the estimated completion date;
3. For activities not yet started: estimated start dates, number of shifts, crew sizes by craft, construction equipment required, revised duration, and estimated completion dates, as necessary; if estimated start dates for activities vary from current schedule, explain variance and effects;
4. For authorized Contract changes: revised activities, number of shifts, crew sizes by craft, construction equipment required, and durations where required;
5. The monthly update of the Contractor's Construction Schedule shall be for the month preceding the meeting and for one month following the meeting. The previous month's activities shall be reported as they actually took place;
6. Portions of the Detailed Network Diagrams on which all activities are complete need not be reprinted and submitted in subsequent updates. However, the file of submitted Detailed Network Diagrams and the related reports shall constitute a clear record of progress of the work from Notice to Proceed to final completion;
7. The monthly submittal to the Owner shall be accompanied by four (4) individually bound copies of a report. The report shall include the information described in the Contractor's Schedule Narrative Report in detail, and shall follow the outline below:

a. Contractor's Schedule Narrative:
   1) Contractor's transmittal letter;
   2) Description of problem areas;
   3) Current and anticipated Contractor caused delays:
      a) Cause of delay;
      b) Corrective action and schedule adjustments to correct the delay so as to maintain affected original milestone completion dates;
      c) Impact of the delay on other activities, on milestones, and on completion dates;
   4) Current and anticipated non-Contractor caused delays:
      a) Cause of delay;
      b) Proposed plan of corrective action and schedule adjustments necessary to correct the delay and maintain affected milestone completion dates, to include anticipated costs and time for which the Contractor considers the Owner liable;
      c) Impact of the delay on other activities, on milestones, and on completion dates;
   5) Approved changes in construction sequence;
   6) Pending items and status thereof:
      a) Permits;
      b) Potential Revisions;
      c) Change Orders;
      d) Time extensions;
      e) Process interfaces and shutdowns;
      f) Other;
   7) Contract completion date(s) status:
      a) Ahead of schedule, and number of working days;
      b) Behind schedule, and number of working days;
   8) Other project or scheduling concerns;
   9) Reviewed and updated Detail Network Diagram and Reports;
   10) Revised cost lading and cash flow information;
   11) Revised labor information;
   12) Revised labor and equipment information;

8. No revisions or additions to the weekly/monthly Progress Reports shall be made other than those reflecting the Owner's prior written approval (i.e., change orders, potential revisions, stop work orders, etc.);
9. The Contractor agrees that, whenever it becomes apparent from the current weekly and/or monthly computer-produced calendar-dated schedule that any Contract completion date will not be met, at no fault of the Owner, he will take any or all of the following actions with prior approval of the Owner and at no additional cost to the Owner:
   a. re-sequencing construction activities,

b. providing additional labor,
c. working additional shifts, or otherwise accelerating the work to maintain the Contract stipulated completion dates.

10. Whenever it becomes apparent from the current weekly and/or monthly progress evaluation and updated schedule data that any milestone date(s) and/or contract completion dates will not be met due to the Contractor's slow progress on critical activities, items a, b and c above shall be incorporated in the CPM all in accordance with section titled "Revisions to Approved Schedule." The revised schedule shall be submitted to the Owner for review and acceptance.
11. A schedule, which has not been accepted in accordance with all requirements set forth in the Contract, may not be used by the Contractor as a basis for requesting equitable adjustments or partial progress payments.

G. Upon final completion of the project, the Contractor shall submit for approval the final complete as-built Contractor's Construction Schedule. The as-built Contractor's Construction Schedule shall identify all project as-built critical paths and shall include the following:

1. All Contract activities identified in the approved Contractor's Construction Schedule, including all added activities and Change Orders, shall be shown;
2. Activity durations shall be the actual number of separate workdays during which work was performed on the activity;
3. Total person-days for an activity shall be the actual number of person-days that were required to complete the activity;
4. The Detailed Network Diagram shall indicate the actual start date and finish date of each activity;
5. Contract milestone completion dates shall reflect the actual date each milestone was completed, as indicated in the Owner issued acceptance letter or Certificate of Beneficial Occupancy.

1.08 REVISIONS TO APPROVED SCHEDULE

A. The Contractor shall prosecute the Work in accordance with the Contractor's Construction Schedule. Changes made to the Contractor's Construction Schedule for accomplishing the work shall require prior acceptance of the Owner.

1. No revisions or additions to the Contractor's Construction Schedule shall be made without the Owner's prior written approval (i.e., change orders, potential revisions, stop work orders, etc.). Failure to comply with this requirement may result in rejecting the schedule.

2. If in the event the Contractor is in disagreement with schedule updates or changes ordered by the Owner, then upon written request by the Contractor, the Owner will render a decision. Notwithstanding the Owner's decision, the Contractor is to incorporate schedule updates or changes as requested by the Owner.

B. Network changes noted by the Contractor and/or the Owner to compensate for corrections, inadequacies, incompatibilities, and inadequate activity breakdown along with the status data agreed to during each update shall be considered acceptable by both parties unless written notice of any exceptions is given by an objecting party within 15 calendar days after receipt of the Contractor's update submission. For major network logic changes that cannot be agreed to during an updating meeting, the Contractor shall submit such revisions in writing, to the Owner for approval prior to inserting such changes into the network. Submissions may be in the form of marked-up networks or "fragnet" illustrations provided they are submitted with a letter of transmittal. The submission and approved procedures will follow the timetable described for Subsection titled "Change Orders and Time Extensions" and "Delays and Time Extensions," below. Changes to activities having adequate float shall be considered minor changes, except that an accumulation of minor changes may be considered a major change when such change affects the Contract Completion Date.

C. In the event the Contractor is in disagreement with schedule updates or logic revisions ordered by the Owner, then upon written request by the Contractor, the Owner will render a decision. Notwithstanding the Owner's decision, the Contractor is to incorporate schedule updates or revisions as requested by the Owner.

D. Construction Schedule updating and/or revisions to compensate for corrections, inadequacies, incompatibilities, and inadequate activity breakdown, including any items and/or logic revisions noted by the Owner, shall be rectified by the Contractor at no additional Owner cost.

1.09 SCHEDULE UPDATES

A. Once each month, on a date established by the Owner, a meeting to review the monthly schedule status will be held. The purpose of this meeting is to review and update the current status of activities to determine completion status for progress payments. The meeting shall be attended by a duly authorized representative of the Contractor and those subcontractors determined to be necessary by the Owner and/or Contractor.

B. Prior to the monthly review meeting, the Contractor shall obtain from his subcontractor's, consultants and suppliers the necessary information required

reflecting progress to date. An updated schedule shall be available for review at the meeting, including all information available as of the cut-off date established by the Owner. A detailed list of all schedule changes shall be submitted with the update.

C. The Contractor shall come to the updating meetings with the above data prepared in advance to provide, as of the end of the updating period, a complete and accurate report of current procurement and construction progress, showing how the Contractor plans to continue the work of this Project to meet all Contract completion dates.

D. Following completion of each monthly progress review meeting, or in no case later than the 25th of each month, four (4) copies of the Contractor's Updated Construction Schedule shall be submitted to the Owner. The updated schedule must include the original (scheduled) duration, remaining duration, percentage of completion (i.e., work completed, not time), scheduled and actual start dates, and scheduled and actual finish dates.

E. Upon final completion of the project, the Contractor shall submit for approval the final complete as-built Contractor's Construction Schedule. The as-built Contractor's Construction Schedule shall include the following:

1. All Contract activities identified in the approved Contractor's Construction Schedule, including all added activities and Change Orders, shall be shown.
2. Activity durations shall be the actual number of separate workdays during which work was performed on the activity.

1.10 CHANGE ORDERS AND TIME EXTENSIONS

A. Reference General Conditions and Section 01 26 00, Contract Modification Procedures.

B. Whenever the Contractor receives a request for proposal for a potential revision from the Owner, it shall submit, within 20 calendar days of said request, a Time Impact Analysis as described hereunder.

C. The Contractor shall submit a written Time Impact Analysis to the Owner, illustrating the influence of each change on the current Contractor's Construction Schedule completion date. Each Time Impact Analysis shall include a fragment network analysis (fragnet), demonstrating the following:

1. How the Contractor proposes to perform the changed work.
2. A listing of activities required to execute the changed work. These activities shall be cost and resource loaded, all in accordance with

Sections titled “Cost Loading and Cash Flow” and “Labor,” respectively.

a. The estimated cost to perform each work activity shall be noted for each activity included in the fragnet submitted with the Time Impact Analysis. The cumulative total of the monetary values of all "change" activities shall be equal to the monetary value of the Contractor's cost proposal for said change.
b. The resources, both labor and equipment, for the "change" activities shall be in substantive agreement with the resources presented in the Contractor's cost proposal for said change.
c. All durations for activities shall be the result of definitive labor and resource planning under contractually defined on-site work conditions by the Contractor to perform the changed work.

D. How the Contractor proposes to incorporate the change into the Detailed Network Diagram. Additionally, the analysis shall demonstrate the time impact based on the following:

1. The date that the Contractor was authorized to proceed with the change or anticipates the issuance of authorization;
2. The status of construction at that point in time as reported in D.1 above; and
3. The event time computation of all affected activities. The event items used in the analysis shall be those included in the latest updated copy of the detailed progress schedule or as adjusted by mutual agreement.
4. Contract time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the path of activities at the time of actual delay or at the time the Contractor was notified that the change was authorized.

E. Time Impact Analysis shall be submitted in triplicate. In cases in which the Contractor does not submit a Time Impact Analysis for a specific change within the specified period of time, then it is mutually agreed that that particular potential revision has no time impact on the Contract completion date and the Project's critical path and no time extension will be granted. Approval or rejection of each Time Impact Analysis by the Owner or his authorized representative shall be made within 15 calendar days after receipt of each Time Impact Analysis, unless subsequent meetings and negotiations are necessary. Upon approval, a copy of the Time Impact Analysis signed by the Owner or his authorized representative shall be returned to the Contractor. Upon mutual agreement by both parties, fragnets illustrating the influence of Change Order will be incorporated into the Detailed Network Diagram during the first update after agreement is reached.

1.11 DELAYS AND TIME EXTENSIONS

A. The Owner is not bound by any Contractor's Construction Schedule until approved in writing by the Owner. In the vent the Contractor proceeds with a schedule that is not approved by the Owner, and in the event of a delay claim, the Contractor shall have the burden of proving that the schedule used is reasonable, and based on its actions, throughout the project, the schedule would have been met.

B. Whenever delays are experienced, the Contractor shall submit a written Time Impact Analysis to the Owner, illustrating the influence of each delay on the current Contractor's Construction Schedule completion date. Each Time Impact Analysis shall include a fragment network analysis (fragnet), demonstrating how the Contractor proposes to incorporate the delay into the Detailed Network Diagram. Additionally, the analysis shall demonstrate the time impact based on the date that the delay began, the status of construction at that point in time, and the event time computation of all affected activities. The event items used in the analysis shall be those included in the latest updated copy of the detailed progress schedule or as adjusted by mutual agreement. Contract time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the path of activities at the time of actual delay or at the time the Contractor was notified that the change was authorized.

C. Each Time Impact Analysis shall be submitted in triplicate and within 15 calendar days after a delay occurs or is recognized. In cases in which the Contractor does not submit a Time Impact Analysis for delay within the specified period of time, then it is mutually agreed that that particular delay has no time impact on the Contract completion date and the Project's critical path and no time extension will be granted. Approval or rejection of each Time Impact Analysis by the Owner or his authorized representative shall be made within 10 calendar days after receipt of each Time Impact Analysis, unless subsequent meetings and negotiations are necessary. Upon approval, a copy of the Time Impact Analysis signed by the Owner or his authorized representative shall be returned to the Contractor. Upon mutual agreement by both parties, fragnets illustrating the influence of Change Order and delays will be incorporated into the Detailed Network Diagram during the first update after agreement is reached.

D. Adjustments to Contract Time for Concurrent Delay:

1. The Contractor may make a claim for an extension of the Contract Time, subject to the following:
    a. If an Excusable Delay and Compensable Delay occur concurrently, the maximum extension of the Contract Time shall

be the number of days from the commencement of the first delay to the cessation of the delay which ends last.

b. If an Inexcusable Delay occurs concurrently with either an Excusable Delay and/or a Compensable Delay, the extension of the Contract Time shall be the number of days, if any, for which the Excusable Delay or the Compensable Delay was concurrent with the Inexcusable Delay.

E. Adjustment to Contract Price:

1. If an Excusable Delay and Compensable Delay occur concurrently, the maximum extension of the Contract Time shall be the number of days from the commencement of the first delay to the cessation of the delay which ends last.
2. If an Inexcusable Delay occurs concurrently with Compensable Delay, the maximum number of compensable days shall be the number of days, if any, by which the Compensable Delay exceeds the Inexcusable Delay.
3. The net approved number of compensable days will be determined by adding the approved number of compensable calendar days for each compensable delay, adjusting for any concurrent compensable delay, and subtracting any Owner caused reductions in Contract Time (such as reductions in Contract Scope).

F. In the event that the Contractor fails to submit a timely and acceptable construction schedule, any work performed thereafter shall be undertaken at the Contractor's own risk. A failure to provide a timely and acceptable schedule constitutes a material breach of this contract. The Owner therefore reserves all rights and remedies available to it upon the contractor's failure to submit a timely and acceptable schedule including, but not limited to, default termination, a stop work order (at no cost to the Owner) and/or the withholding of partial progress payments.

G. A decision by the Owner to permit work to proceed in the absence of a timely and acceptable schedule is not to be construed as a waiver by the Owner of any or all of its rights and remedies. In the event that the Contractor proceeds with a schedule not accepted by the Owner, and in the event of a delay claim, the Contractor will have the burden of proving that the schedule is reasonable, and based on its actions throughout the project, the schedule would have been met.

H. In the absence of a timely and acceptable schedule:

1. The Owner is not obligated to determine impact of delays to the project.
2. The Contractor is not entitled to an equitable adjustment.

3. The Owner may presume that the Contractor is responsible for any anticipated or actual failure to complete the work within the time specified in the contract, or any previously granted extension thereof.
4. The Contractor as a basis for requesting equitable adjustments or partial progress payments may not use a schedule, which has been accepted but has not been updated in accordance with all requirements set forth in the contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Work under pay items, with the exception of mobilization, shall not commence until the Owner accepts a schedule conforming to all contract requirements.

B. Contractor's failure to comply with these requirements will result in delay in progress payments, other than mobilization, until such procedural requirements are satisfactorily met.

3.02 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference will be arranged by the Owner that will include representatives of the Owner, the Contractor and other agencies, both governmental and private, affected by the work to discuss and clarify points of issue involving the construction schedule, restriction, and the general conduct of the work under the Contract.

B. The Construction Schedule will not be approved, and no work shall be started until after this conference.

END OF SECTION

SECTION 01 32 33
CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.01 SUMMARY

A. Contractor shall be responsible for the production of pre-construction and construction photographs as provided herein.

1.02 SUBMITTALS

A. Informational Submittals: Monthly submittal of photographs with the monthly application for payment.

1.03 DESCRIPTION

A. Provide a minimum of ten (10) photographs of each element and existing project conditions in the vicinity of, and abutting, proposed construction taken prior to any activity at his site(s) and submitted to the Owner before any activity takes place. The same views shall be re-photographed upon completion of all construction activities.

B. Provide construction photographs taken no less frequently than biweekly throughout the progress of the work until final completion of project.

C. Contractor shall have suitable photographs taken before, during and after construction of the project.

D. Contractor shall indicate construction limits by painting or otherwise conspicuously marking construction boundaries to show on preconstruction photos. Preconstruction photos shall be marked as such in the title block.

E. Contractor shall have suitable photographs to show the level of work that has been completed during the progress period each month.

F. The photos shall produce a visual step-by-step record of the progress of construction on the project.

G. Furnish photos in digital (.jpg) or format approved by Owner in Owner-Selected Electronic System.

1.04 QUALITY ASSURANCE

A. Visibility: All photographs shall be performed during times of good visibility

B. All digital image files shall be previewed for color accuracy on a calibrated computer monitor

C. Digital file images are not to be computer manipulated in any manner which alters the visual information in the original photograph, except for fundamental color and/or density (brightness) corrections required for proper printing or saving.

1.05 DESCRIPTION OF WORK

A. Take a minimum of 30 preconstruction photographs.

B. Take a minimum of 30 progress photographs on a monthly basis during performance of the Work.

PART 2 PRODUCTS

2.01 CAMERA

A. Digital images may be created using original digital photographic equipment. Digital camera capabilities must have a sensor capacity of at least six (6) megapixels and should be capable of utilizing a moderate wide-angle lens system, a moderate telephoto lens and an electronic flash capable of properly illuminating large interior spaces. Camera must produce original uncompressed JPEG format images files that open to display at dimensions which exceed 20x30 inches, at a minimum of 72 dpi resolution, or raw format images which can be computer-processed to this specification in either JPEG or TIF or format approved by Owner.

2.02 CONTACT SHEETS

A. Thumbnail.

B. Color.

C. Finish: Smooth surface, glossy.

D. Data: digital file name and number of each image.

E. Mounting: In archival-quality protective pages.

F. Format: JPEG, or format approved by Owner.

2.03 IDENTIFICATION

A. Contractor shall maintain a log sheet listing the views photographed which shall include direction of view, station number or street address. The log shall include the name of the photographer and a unique individual sequential photo number Identify the specifications for all products to be incorporated into the Work as addressed in this Section.

PART 3 EXECUTION

3.01 GENERAL

A. Consult with the Owner for instructions concerning views required at each specified visit to site.

B. Contractor shall give the Owner the opportunity to accompany the photographer during the photo session(s).

C. The Owner will request certain views to be taken in select instances.

D. Photographs shall generally be taken on a random basis throughout each session to document various phases of the construction activities, with particular emphasis on the past month’s construction progress.

E. Contractor shall maintain a log sheet listing the views photographed which shall include direction of view, station number or street address. The log shall include the name of the photographer and a unique individual sequential photo number.

F. Submit photographic records with the monthly pay request.

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including but not limited to:

1. Contractor's Progress Schedule.
2. Schedule of Values.
3. Schedule of Payments.
4. Submittal Schedule
5. Daily Construction Reports.
6. Shop Drawings.
7. Product Data.
8. Samples.

B. Inspection and test reports are included in Section 01 45 16, Contractor Quality Control.

1.02 DEFINITIONS

A. Action Submittal: Written and graphic information submitted by Contractor that requires Owner's approval.

B. Elevation: The figures given on the Drawings or in the other Contract Documents after the work "elevation" or abbreviation of it shall mean the distance in feet above the standard datum used by the Owner.

C. Informational Submittal: Written information that does not required the Owner's responsive action. Information submitted by Contractor that requires the Owner's review and determination that submitted information is in accordance with the Conditions of the Contract.

D. Shop Drawings: drawings, diagrams, illustrations, schedules, catalog cuts, performance charts, brochures, and other data prepared by the Contractor or any subcontractor, manufacturer, supplier, or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed. Drawings prepared by the fabricator or supplier showing the layout and details of components fabricated in a shop for inclusion in the permanent facility (e.g., structural steel, reinforcing steel, railings, etc.).

E. Working Drawings: Drawings furnished by the Contractor showing the layout and details of temporary construction, procedures and methods of construction, and data for construction equipment which are to be employed in

the construction of the permanent facility (e.g., form drawings, erection drawings, load test pile procedures, pile hammer data, etc.).

1.03 PROCEDURES

A. Direct submittals to Resident Engineer unless specified otherwise.

B. Electronic Submittals: Submittals shall, unless specifically accepted, be made in electronic format and processed manually until such time that the Owner-Selected Electronic System (OSES) is implemented on the project.

1. Each submittal shall be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
2. Electronic files that contain more than 10 pages in PDF format shall contain internal bookmarking from an index page to major sections of the document.
3. PDF files shall be set to open "Bookmarks and Page" view.
4. Add general information to each PDF file, including title, subject, author, and keywords.
5. PDF files shall be set up to print legibly at 8-1/2-inch by 11-inch, 11-inch by 17-inch, or 22-inch by 34-inch. No other paper sizes will be accepted.
6. Submit new electronic files for each resubmittal.
7. Include a copy of the Transmittal of Contractor's Submittal form, located at end of section, with each electronic file.
8. Provide Engineer with authorization to reproduce and distribute each file as many times as necessary for Project documentation.
9. Detailed procedures for handling electronic submittals will be discussed at the preconstruction conference.
10. The Contractor shall assign at least one employee to become the OSES manager and be certified in the OSES platform as a "train the trainer" at which time that employee will train the remaining Contractors OSES users.

C. Transmittal of Submittal:

1. Contractor shall:
    a. Review each submittal and check for compliance with Contract Documents.
    b. Stamp each submittal with uniform approval stamp before submitting to the Resident Engineer.
        1) Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.

2) Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

c. Fill out and affix the Transmittal of Contractor's Submittal form to each submittal package (see Attachment 1).
   1) Transmittal Number.
      a) Transmittal numbers shall begin with a specification section pre-fix followed by "01" and run consecutively.
      b) In cases where resubmittals are necessary, subsequent submissions shall carry suffixes "A", "B", etc.
      c) Example: For the second resubmittal of the eighth submittal under specification Section 26 05 01, Electrical, the entire transmittal number would be: 26 05 01-08-B.
   2) Specification section and paragraph to which submittal applies.
   3) Project title and the Owner's project number.
   4) Date of transmittal.
   5) Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.
   6) Identify and describe each deviation or variation from Contract Documents.
   7) Complete, sign, and transmit via e-mail to the Resident Engineer, until such time that the Owner-Selected Electronic System comes on-line, with each submittal package, one Transmittal of Contractor's Submittal form attached at end of this section.

D. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.
2. Package submittal information by individual specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in specification.
3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
4. Index with labeled tab dividers in orderly manner.

E. Timeliness: Schedule and submit in accordance Schedule of Submittals and requirements of individual specification sections.

1. Review time commences on the date the submittal is logged in by the Resident Engineer.
2. Unless specific submittal review periods are indicated in the technical specifications, the Owner's submittal review period shall be 30 consecutive calendar days in length and shall commence on the first

calendar day immediately following the date of arrival of the submittal or resubmittal in the Owner's office. The time required to mail the submittal or resubmittal back to Contractor shall not be considered a part of the submittal review period.

3. Resubmittals will be subject to same review time.
4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.

F. Resubmittals: Clearly identify each correction or change made.

G. Incomplete Submittals:

1. Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
2. When any of the following are missing, submittal will be deemed incomplete:
   a. Contractor's review stamp; completed and signed.
   b. Transmittal of Contractor's Submittal; completed and signed.
   c. Insufficient number of copies.

H. Submittals not required by Contract Documents:

1. Will not be reviewed and will be returned stamped "Not Subject to Review."
2. Engineer will keep one copy and return submittal to Contractor.

1.04 ACTION SUBMITTALS

A. Prepare and submit Action Submittals required by individual specification sections.

B. Shop Drawings:

1. Electronically, in the format outlined above.
2. If hard copy submittal is required, eight copies and one reproducible of any documents larger than 11 inches by 17 inches, except copyrighted documents.
3. Identify and indicate:
   a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
   b. Equipment and Component Title: Identical to title shown on Drawings.
   c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
   d. Project-specific information drawn accurately to scale.

4. Manufacturer's standard schematic drawings and diagrams as follows:
   a. Modify to delete information that is not applicable to the Work.
   b. Supplement standard information to provide information specifically applicable to the Work.
5. Product Data: Provide as specified in individual specifications.
6. Foreign Manufacturers: When proposed, include the following additional information:
   a. Names and addresses of at least two companies that maintain technical service representatives close to Project.
   b. Complete list of spare parts and accessories for each piece of equipment.

C. Samples:

1. Copies: Two, unless otherwise specified in individual specifications.
2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
   a. Manufacturer name.
   b. Model number.
   c. Material.
   d. Sample source.
3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.
4. Full-size Samples:
   a. Size as indicated in individual specification section.
   b. Prepared from same materials to be used for the Work.
   c. Cured and finished in manner specified.
   d. Physically identical with product proposed for use.

D. Action Submittal Dispositions: Engineer will review, comment, stamp, and distribute as noted:

1. Approved as Submitted (for incorporation in Work):
   a. Contractor may begin to implement activities to incorporate specific product(s) or Work covered by Submittal.
   b. If hard copy submittals are required, the following shall apply:
      1) One copy furnished Owner.
      2) Two copies furnished Resident Project Representative.
      3) One copy retained in Engineer's project office file.
      4) One copy retained in Engineer's design office file.
      5) Two copies sent to the Building Department, Special Inspections Submittals only.
      6) Two copies sent to the permitting agency, Deferred Submittals only.
      7) Remaining copies returned to Contractor appropriately annotated.

2. Approved as Noted (for incorporation in Work):
   a. Contractor may begin to implement activities to incorporate product(s) or Work covered by Submittal, in accordance with Engineer's notations. Contractor shall acknowledge noted comments on Contractor letterhead.
   b. If hard copy submittals are required, the following shall apply:
      1) One copy furnished Owner.
      2) One copy furnished Resident Project Representative.
      3) One copy retained in Engineer's project office file.
      4) One copy retained in Engineer's design office file.
      5) Two copies sent to the Building Department, Special Inspections Submittals only.
      6) Two copies sent to the permitting agency, Deferred Submittals only.
      7) Remaining copies returned to Contractor appropriately annotated.
3. Rejected:
   a. Submittal is not approved.
   b. If hard copy submittals are required, the following shall apply:
      1) One copy retained in Engineer's project office file.
      2) Remaining copies returned to Contractor appropriately annotated.
4. Revise and Resubmit:
   a. Submittal is not approved; resubmittal is required.
   b. If hard copy submittals are required, the following shall apply:
      1) One copy furnished Resident Project Representative.
      2) One copy retained in Engineer's file.
      3) Remaining copies returned to Contractor with one copy appropriately annotated.
      4) Contractor shall complete and resubmit or submit missing portions.
5. Partially Approved (PA), Approved as Noted:
   a. Submittal is Partially Approved. Contractor shall resubmit items not approved. Contractor shall acknowledge noted comments on Contractor letterhead for items Approved as noted.
   b. If hard copy submittals are required, the following shall apply:
      1) One copy furnished Owner.
      2) One copy furnished Resident Project Representative.
      3) One copy retained in Engineer's project office file.
      4) One copy retained in Engineer's design office file.
      5) Two copies sent to the Building Department, Special Inspections Submittals only.
      6) Two copies sent to the permitting agency, Deferred Submittals only.
      7) Remaining copies returned to Contractor appropriately annotated.

1.05 INFORMATIONAL SUBMITTALS

A. General:

1. Submit electronically, in the format outlined above.
2. If hardcopy submittals are required, submit six copies, unless otherwise indicated in individual specification section.
3. Refer to individual specification sections for specific submittal requirements.
4. Engineer will review each submittal. If submittal meets conditions of the Contract, Engineer will forward copy to appropriate parties. If Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Engineer will return submittal electronically with review comments to Contractor, and require that submittal be corrected and resubmitted.

B. Certificates:

1. General:
   a. Provide notarized statement that includes signature of entity responsible for preparing certification.
   b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Welding: In accordance with individual specification sections.
3. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual specification section.
4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.
6. Manufacturer's Certificate of Compliance: In accordance with Section 01 61 00, Common Product Requirements.

C. Construction photographs and video in accordance with Section 01 32 33, Construction Photographs, and as may otherwise be required in Contract Documents.

D. Closeout Submittals: In accordance with Section 01 77 00, Contract Closeout.

E. Contractor-design Data (related to temporary construction):

1. Written and graphic information.
2. List of assumptions.
3. List of performance and design criteria.
4. Summary of loads or load diagram, if applicable.

5. Calculations.
6. List of applicable codes and regulations.
7. Name and version of software.
8. Information requested in individual specification section.

F. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.

G. Operation and Maintenance Data: As required in Section 01 78 23, Operation and Maintenance Data.

H. Payment:

1. Application for Payment: In accordance with Section 01 29 00, Payment Procedures.
2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.
3. Schedule of Estimated Progress Payments: In accordance with Section 01 29 00, Payment Procedures.

I. Quality Control Documentation: As required in Section 01 45 16, Contractor Quality Control.

J. Schedules:

1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, Construction Progress Documentation.
   a. Show for each, at a minimum, the following:
   b. Specification section number.
   c. Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
   d. Estimated date of submission to Engineer, including reviewing and processing time.
   e. On a monthly basis, submit updated Schedule of Submittals to Engineer if changes have occurred or resubmittals are required.
2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.
3. Schedule of Estimated Progress Payments: In accordance with Section 01 29 00, Payment Procedures.
   a. Progress Schedules: In accordance with Section 01 32 00, Construction Progress Documentation.

K. Special Guarantee: Supplier's written guarantee as required in individual specification sections.

L. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.

M. Submittals Required by Laws, Regulations, and Governing Agencies:

1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
2. Transmit to Engineer for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.

N. Test, Evaluation, and Inspection Reports:

1. General: Shall contain signature of person responsible for test or report.
2. Factory:
    a. Identification of product and specification section, type of inspection or test with referenced standard or code.
    b. Date of test, Project title and number, and name and signature of authorized person.
    c. Test results.
    d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
    e. Provide interpretation of test results, when requested by Engineer.
    f. Other items as identified in individual specification sections.
3. Field: as a minimum, include the following:
    a. Project title and number.
    b. Date and time.
    c. Record of temperature and weather conditions.
    d. Identification of product and specification section.
    e. Type and location of test, Sample, or inspection, including referenced standard or code.
    f. Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
    g. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
    h. Provide interpretation of test results, when requested by Engineer.
    i. Other items as identified in individual specification sections.

O. Testing and Startup Data: In accordance with equipment specification sections.

1.06 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. The Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SAMPLES, SHOP AND WORKING DRAWINGS

A. When requested, the Contractor should submit sufficient data relating to proposed materials and equipment to enable the Owner to identify and evaluate the particular product. Manufacturers test reports and certifications shall be submitted as requested. Such data shall be submitted in a manner similar to that specified for submission of shop and working drawings.

B. When requested, the Contractor should submit samples of material for tests, as the Owner deems necessary to demonstrate conformity with specifications. Such samples shall be furnished, taken, stored, packed, and shipped by the Contractor so as to reach their destination in good condition, and shall be labeled to indicate material represented, name of project, intended location of the material and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the Owner by letter that samples have been shipped and shall properly describe the samples in the letter. Then notification letter shall be sent separately from, and should not be enclosed, with, the samples.

C. Contractor shall submit data and samples sufficiently early to permit consideration, inspection, testing, and approval before the materials and equipment are needed for the work. Failure to do so shall be the Contractor's sole responsibility.

D. To demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship of wall and floor finish, etc. as may be requested.

E. No material or equipment shall be purchased or fabricated for the Contract until the shop drawings have been approved. Materials and equipment used in the work shall in all respects conform to approved data and samples.

F. The Contractor shall give written notice to the Owner of the place and time where fabrication, manufacture, testing, and shipping will take place for all materials and products for which off-site testing is specified in the Contract or as specifically requested by the Owner. Such notice shall be in writing and delivered to the Owner no less than ten (10) days before the event so that arrangements for inspection may be made.

G. The Contractor shall not use any shop drawing which does not bear the Owner's authorized approval stamp.

H. No changes shall be made to approved shop drawings and submitted working drawings without resubmission and approval.

I. Shop and working drawings shall be prepared by the Contractor and submitted to the Owner sufficiently ahead of proposed work so that review, correction and approval actions as described herein will not delay construction operations.

J. At the time of each submission, the Contractor shall give specific written notice of each variation that the shop and working drawings or samples may have deviated from the requirements of the Contract Documents, and in addition, shall cause a specific notation to be made on each shop and working drawing submitted for review of each variation. The review of shop drawings or samples shall not relieve the Contractor from the responsibility for any variation from the requirements of the Contract Documents unless the Contractor has in writing called attention to each such variation at the time of submission and the Owner has given written acceptance of each such deviation by a specific written notation incorporated in or accompanying the shop or working drawing or sample review; nor will any review relieve the Contractor from responsibility for errors or omissions in the shop or working drawings.

K. Each submittal shall list the codes and standards governing the materials, design, and manufacture of the items covered by the submittal, with particular

attention to the codes and standards set forth in the Specifications. The list shall indicate the year or date of issue of each code or standard utilized by the manufacturer or Supplier in the production of the items in question.

L. Identify field dimensions; show relation to adjacent or critical features or work or products.

M. The data shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangements, and operation of component materials and devices; the external connections, anchorages, and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.

N. When catalog pages are submitted, applicable items shall be clearly identified and inapplicable data crossed out. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

O. Contractor's stamp of approval is a representation to the Owner that Contractor accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that he has reviewed and coordinated each submittal with the requirements of the Work and the Contract Documents. Contractor shall correct all field dimensions and criteria and shall be responsible for the coordination of work by all Subcontractors.

P. Contractor shall accept full responsibility for the completeness of each submission. When an item consists of components from several sources, Contractor shall submit a complete initial submittal including all components.

Q. All variations from the Contract Documents shall be identified on each submittal and shall be tabulated in Contractor's letter of transmittal. Such submittals shall, as pertinent to the variation, indicate essential details of all changes proposed by Contractor (including modifications to other facilities that may be a result of the variation) and all required piping and wiring diagrams.

R. Assemble complete submittal into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation of each item.

S. The Owner will not accept submittals from anyone but the Contractor. Facsimile (fax) copies will not be acceptable.

T. Additional Requirements for Electronic Submittals:

1. All Electronic submittals via email or on flash drives shall adhere to the following.
    a. All submissions shall be complete; partial submissions will not be acceptable.
    b. Contractor shall QA/QC all electronic documents and files prior to submission. All documents must be legible, have clarity, be positioned upright, and have page/document copied in full.
    c. The transmittal sheet for each submittal shall be scanned as one searchable pdf document and included with the electronic submittal.
    d. When submitting multiple required copies of a document, multiple copies in one pdf document on one flash drive will not be acceptable.
    e. All digital or electronic drawing submittals shall be prepared using the following naming convention:
    f. PROJECT ACRONYM – DISCIPLINE CODE – DRAWING NUMBER.FILE EXTENSION (dwg or pdf)
2. Information on loose or uncased CDs or DVDs, etc. will not be accepted by the Owner for this Contract.
3. All flash drive submittals shall include printed labels identifying the Contract name and number, the contents of the flash drive and the Manufacturer or source of the files.
4. Each flash drive shall include a digital index of the file contents with links to facilitate quick access to each section, chapter, topic, document file, etc. All documents must be in acceptable standard formats (MS Word, MS Excel, PowerPoint, Adobe Acrobat, AutoCAD, HTML), fully indexed, and searchable.
5. Each flash drive shall c be a contained folder:
    a. Cover information shall identify the construction contract name and contract number; submittal number; submittal revision number; Specification Section(s) and/or Drawing Number(s) referenced; Submittal title and purpose; Manufacturer's or Vendor's name (or originator of the files); Contractor's name; index or other pertinent information to describe the contents.
    b. Flash drives containing numerous files shall include a printed Table of Contents page identifying location and nature of all major files. Printed index shall match the digital index contained on the flash drive.
6. Submittals which include multiple flash drives (for example: construction photos, record documents, complex technical submittals, etc.) shall include white 3-ring binders to contain and organize the binder sheets.
    a. Each binder shall be maximum 3-inch size. Multiple binders shall be provided if necessary to contain all flash drive binder sheets.

b. The cover and spine of each binder shall be labeled to identify: the project name and contract number; the binder contents; the submission date; and the Contractor's name and pertinent equipment vendor's or supplier's names.
c. Each binder shall include a printed title page (similar to the binder cover) and a printed Table of Contents. The Table of Contents shall identify each binder sheet pocket and its contents including each flash drive's document file names and file paths, and a brief written description of the file contents for each file contained on each flash drive.
d. Each flash drive and jewel case label shall also include corresponding information to identify the binder name/number and binder sheet page number and pocket location where the flash drive is to be stored.

7. Submittals which include only one binder sheet (2 flash drives maximum) do not require 3-ring binders, unless the binders are specifically required or specified elsewhere to be provided.

U. Specific Shop Drawing Requirements: All shop drawing submittals shall conform to the following specific requirements for all Mechanical, Electrical, Instrumentation, Special Construction, Facility, Furniture, Plumbing, etc. submittals, where applicable:

1. Technical bulletins, technical data sheets from "soft-cover" catalogs, standard equipment operations and maintenance (O&M) manuals, and descriptive literature or catalog information which is "highlighted" or somehow identifies the specific equipment items the Contractor intends to provide are acceptable for each individual equipment component. Manuals shall contain all illustrations, detailed drawings, wiring diagrams and instructions necessary for installing, operating and maintaining the equipment. The illustrated parts shall be numbered for identification. All information shall apply specifically to the equipment furnished and shall only include instructions that are applicable.
2. System Description: Describes the equipment and how it functions, identifies the installation location, number of units furnished; the equipment tag number or unit ID, and a list of principal components that includes the equipment name, model number, manufacturer, size, performance data, operating conditions and design requirements.
3. Equipment Operation: Provide written pre-startup, startup, normal operation and shutdown instructions for the equipment provided. Also include emergency shutdown procedures. The written descriptions are specially prepared to describe the operation of the equipment and control system. Include contract document control diagrams and process and instrumentation diagrams relating to the equipment operation.
4. Safety: Address all safety and tag-out procedures necessary to safely operate and maintain the equipment.

5. Dimensional Drawings: General dimensions to confirm the size of pumps, motors, drives and specified appurtenances; piping connections; construction details and layout diagram of equipment; wiring details and weight of equipment.
6. Installation: Method recommended for installation of all component assemblies, operating characteristics, and application data for the equipment. Include layout drawings showing fabrication, assembly and typical installation details.
7. Equipment Lubrication: Provide the required lubricant recommended by the manufacturer for the equipment. Furnish a list of recommended lubricants from four different manufacturers and their model and part number. Include an estimated quantity of lubricant required for a full year's operation and lubrication frequency.
8. Statistical Information: Equipment performance such as pump curves, flow charts, total dynamic head, rpm, horsepower or size. Instrument data obtained such as range, set points, input/output characteristics, calibration, configuration parameters, size and graduations in the Owner units. Insulation resistance, calibration, or test data sheets to use as documentation for acceptance testing.
9. Preventative Maintenance: Identify tasks and frequency for performing equipment inspections. Address tasking for equipment inspection, testing and routine adjustments. Include all applicable visual examinations and the adjustments necessary for periodic preventive maintenance of the system. Maintenance tasking includes procedures covering checkout, troubleshooting and equipment testing. Checkout procedures provide the ability to verify the satisfactory operation of equipment. Troubleshooting procedures serve as a guide in determining faulty components. Equipment testing procedures cover requirements and recommended intervals for calibration, configuration and incorporate inspection reports, test results and all measurements and data.
10. Materials List: A complete list of all component assemblies, materials and equipment proposed to be furnished and installed under this portion of the work, giving manufacturer's name, catalog number, Original Equipment Manufacturers (OEM) parts number, and catalog cut for each item. Identify all parts with manufacturer's catalog number and other pertinent information. Include equipment drawing or catalog cut for each part listed in parts list. All parts on a parts list shall be properly identified, including manufacturer's catalog number and other pertinent information.
11. Recommended Spare Parts: A list of the manufacturer's recommended spare parts and the suggested replacement frequency of wear parts for equipment components with the manufacturer's current price for each item.
12. Troubleshooting Procedures: Corrective action proposed for any mechanical or electrical problems related to the equipment operation. Include guides for locating malfunctions. These guides shall include

adequate details for quickly and efficiently locating the cause of an equipment malfunction and shall state the probable source(s) of trouble, the symptoms, probable cause and instructions for remedying the malfunction.

13. Assembly/Disassembly: Equipment shall be detailed for complete disassembly and assembly with procedures to remove & install, to assist with servicing the equipment and to facilitate repairs. The equipment shall be covered by cross-sectional drawings or exploded views with all parts numbered to correspond with the numbers in the parts list to permit identification of the various parts.
14. Diagrams and Schematics: Provide complete wiring diagrams, control circuits and field interconnection diagrams for all electrical and control equipment including panel drawings, fabrication drawings, loop diagrams, and point-to-point wiring diagrams. Drawings shall depict all components, piping and electrical connections of the systems supplied under this Section.
15. Electrical As-Built Drawings: "As Built" wiring and interconnection drawings shall be provided for all field installed and applied wiring as part of the Contract for all electrically powered devices. The drawings shall be supplied in addition to the wiring and interconnection diagrams specified and required in the individual sections of the technical specifications. The drawings shall illustrate electrical control devices, instruments and systems, and all instrumentation and/or control devices, instruments and systems, and all instrumentation and/or control systems.
16. Warranty/Guarantee: Provide manufacturer's guarantee of equipment operation and warranties of individual components.
17. Field Test Records: Equipment performance data at the specified operating conditions is used as a bench mark for future routine maintenance and trouble shooting.
18. Equipment Data for Mechanical, Special Construction and Facilities: Required for all equipment furnished under the Contract involving motors over 1/3 horsepower. Equipment data sheet forms are supplied by the Owner.
19. Equipment Data for Instrumentation: Required for all instrumentation equipment furnished under the Contract:
    a. A complete system block diagram(s) showing in schematic form, the interconnections between major hardware components such as; control centers, panels, power supplies, consoles, computer and peripheral devices, telemetry equipment, local digital processors and like equipment. The block diagram shall reflect the total integration of all digital devices in the system. All components shall be clearly identified with appropriate cross references to the location of each.
    b. Data sheet for each hardware component listing all model numbers, optional, auxiliary and ancillary devices that are being provided.

c. Equipment specification sheets which shall fully describe the device, the intended function, how it operates and its physical environmental and performance characteristics. Each data sheet shall have appropriate cross references to loop or equipment identification tags.
d. Detailed drawings covering control consoles and/or enclosures.
e. The System Hardware submittal shall also contain all planning information, site preparation instructions, grounding and bonding procedures, cabling diagrams, plug identifications, safety precautions or guards and equipment layouts in order to proceed with the detailed site preparation for all equipment.
    1) A comprehensive index.
    2) A complete "As Constructed" set of approved shop drawings.
    3) A complete list of the equipment supplied, including serial numbers, ranges and pertinent data.
    4) Full specifications on each item.
    5) System schematic drawings "As Constructed", illustrating all components, piping and electrical connections of the systems supplied under this Section.
    6) Detailed service, maintenance and operation instructions for each item supplied.
    7) Special maintenance requirements particular to this system shall be clearly defined, along with special calibration and test procedures.
    8) The operating instructions shall also incorporate a functional description of the entire system, with references to the systems schematic drawings and instructions.
    9) Complete parts lists with stock numbers and name, address and telephone number of the local supplier/manufacturer.
f. The Hardware Maintenance Documentation shall describe the detailed preventive and corrective procedures required to keep the system in good operating condition. Within the complete Hardware Maintenance Documentation, all hardware maintenance manuals shall make reference to appropriate diagnostics, where applicable, and all necessary timing diagrams shall be included. A maintenance manual or a set of manuals shall be furnished for all delivered hardware, including peripherals. The Hardware Maintenance Documentation shall include, as a minimum, the following information:
    1) Operation Information: This information shall include a detailed description of how the equipment operates and a block diagram illustrating each major assembly in the equipment.
    2) Preventative-Maintenance Instructions: These instructions shall include all applicable visual examinations, hardware testing and diagnostic routines and the adjustments

necessary for periodic preventive maintenance of the System.

3) Corrective Maintenance Instructions: These instructions shall include guides for locating malfunctions down to the card-replacement level. These guides shall include adequate details for quickly and efficiently locating the cause of an equipment malfunction and shall state the probable source(s) of trouble, the symptoms, probable cause and instructions for remedying the malfunction.

4) Parts Information: This information shall include the identification of each replaceable or field repairable module. All parts shall be identified on a list in a drawing; the identification shall be of a level of detail sufficient for procuring any repairable or replaceable part.

g. The Software Maintenance documentation shall provide a detailed description of the entire software system. This documentation shall be sufficient for software maintenance and modification of the entire software system. The following items shall be included with the software maintenance documentation.

1) Manufacturer's User Manuals: All Manufacturer's manuals applicable to the system being provided.

2) Software User Manuals: All applicable software manuals developed for the application software shall be provided.

3) Application/Custom Software Manuals: These manual(s) shall include all software maintenance information not included in the manufacturer's standard manuals. Each custom program developed specifically for the system shall include the following information as a minimum:

a) Table of contents.

b) Overview of the program.

c) Narrative describing exactly how the program works. All calculations, references to process I/O points and operator inputs should be mentioned.

d) A flowchart shall be provided to clarify the narrative description.

e) A List of Variables used by the program including the function of each. A cross reference to the Software Functional Design Documentation shall be provided where appropriate.

4) Software Listings: Two sets of well-annotated program listings of all software provided shall be furnished for all software items. These shall include, but not be limited to, the following:

a) All listings associated with the system generation and software configuration of the specific system (i.e., system parameterization tables, build maps, disk maps, etc.).

b) Listings of all data bases configured for and associated with the system.
c) Listing of all custom or modified software developed specifically for the system.
d) These listings shall reflect any changes made after the factory acceptance test.

20. Equipment Data for Electrical: Catalog cuts of equipment components by any other manufacturer must be included with any submittal.
21. Electric Motor Data: Product data for electric motors shall include motor data sheets, dimensional drawings, wiring diagrams identifying electric characteristics and design, mechanical construction, manufacturer's name, type and pertinent specifications for the use intended, along with the name off the equipment to be driven. A complete tabulation shall include:
22. Design data and computations shall be included in drawing submissions for sewer and water main pipe work.
23. For pressure conduits and rubber gasket jointed pipe, a checklist shall be submitted showing sequence of submission of anticipated drawings, geometry sheets, bills of material, and laying schedules.
24. Contractor shall submit for approval shop drawings for concrete reinforcement, structural details, railing, wiring, piping layouts, pipe joints and pipe harnessing, pipe thrust block layout, valves, material fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested.
25. Shop drawings shall show the principal dimensions, weight, structural features, clearances, types and/or brand of finish or shop coat, grease fittings, etc. to establish the intent of drawings and specifications. Grade, class or strength of materials shall be included. When it is customary to do so, when dimensions are of particular importance, or when so specified, shop drawings shall be certified by the manufacturer or fabricator as correct for the Contract.
26. Any proposed option shall be clearly marked, with a reference indicated on the detail the option is intended to replace.
27. Working drawings for sheeting, shoring, concrete forms for structures, staging, cofferdams, underpinning and temporary structures shall be submitted, accompanied by a description of the design basis, applicable codes and loads, and calculations for all stress carrying members.
28. Working Drawings shall be prepared under the direction and bear the seal of a registered professional engineer with a valid Commonwealth of Virginia P.E. license.
29. Any changes to working drawings will require resubmission and resealing. Whenever working drawings are submitted for structural supports and systems, the P.E. certifying said drawings shall have a valid civil/structural license.

V. The Owner's Review:

1. The Owner's review of shop drawings and data submitted by Contractor will cover only general conformity to the Drawings and Specifications, external connections and dimensions which affect the layout. The Owner's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. The Owner's review shall not relieve Contractor of Contractor's responsibility for errors, omissions, or deviations in the drawings and data, nor of sole responsibility for compliance with the Contract Documents.
2. The Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. Approval will be general and will not relieve the Contractor of the responsibility for accuracy, proper fit, and construction of work per the Contact nor for furnishing of material or work required but not indicated.

W. Resubmittal of Drawings and Data:

1. Contractor shall accept full responsibility for the completeness of each resubmittal. Contractor shall verify that all corrected data and additional information previously requested by the Owner are provided on the resubmittal.
2. When corrected copies are resubmitted, Contractor shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by the Owner on previous submissions.
3. If more than one resubmission is required because of failure of Contractor to provide all previously requested corrected data or additional information, Contractor shall reimburse the Owner for the charges of the Owner for review of the additional resubmissions. This does not include initial submittal data such as shop tests and field tests which are submitted after initial submittal.
4. Upon the second return of a submittal requiring a resubmission or any resubmittal thereafter, a meeting will be held at the site with the CM, Design Engineer, Contractor project manager and vendor representatives of the submitted item to review and reconcile, to the extent possible, outstanding review comments.
5. Any need for more than one resubmission, or any other delay in obtaining the Owner's review of submittals, will not entitle Contractor to extension of the Contract Times unless delay of the Work is directly caused by a change in the Work authorized by a Change Order or other reason beyond the control of the Contractor.
6. Resubmittals shall be made within 14 days of the date of the letter returning the material to be modified or corrected, unless within 7 days Contractor submits an acceptable request for an extension of the

stipulated time period, listing the reasons the submittal cannot be completed within that time.

3.02 REQUESTS FOR INFORMATION (RFI)

A. Questions during construction shall be submitted to the Construction Manager in a form that is approved prior to the start of construction (see Attachment 2).

B. RFI's shall be submitted as a Word Document with discrete cells for data entered and in pdf form to the Owner. All attachments to RFIs shall be submitted in pdf form.

C. Minimum information that must be included within the RFI form shall include, but not necessarily be limited to:

1. Contractor's contact name.
2. Project Number and name.
3. Date.
4. Sequential number of RFI.
5. RFI subject.
6. Contract Document References.
7. Detailed description of issue/request.
8. Recommended disposition.

3.03 SUBCONTRACT

A. Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, email address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Submit the Owner Subcontractor Form.
5. Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architect, engineers and the Owner.
6. Submit six (6) copies, the Owner will return two (2) copies. Markup and retain one (1) returned copy as a Project Record Document.

3.04 CERTIFICATES

A. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements

B. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedures Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

C. Installation Certificates: Prepared written statements on manufacturer's letterhead certifying that Installer complied with manufacturer's installation requirements.

D. Material & Product Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard forms, indicating and interpreting test results of material for compliance with Contract Documents.

E. Field Test Reports: Prepared reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with Contract Documents.

3.05 OTHER SUBMITTALS

A. Contractor shall submit reports, plans, permits, working drawings and other submittals as specified elsewhere or shown on the Drawings.

B. Material Safety Data Sheets (MSDSs): Submit four (4) copies to the Owner.

3.06 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this Specification.

1. Transmittal of Contractor's Submittal.
2. Request for Information Form.
3. Template for Submittal Routing Form.

END OF SECTION

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL

Alexandria Renew Enterprises

[INSERT GC LOGO]

Contract Name: *TBD*

Submittal No.
Contract No. | Spec. Section | Seq. No. | Rev.

Contractor: *TBD*

TO:

FROM:

☐ New Submittal ☐ Resubmittal

(Cover only one section with each transmittal)

Referenced Drawings:

Scheduled Date of Submittal:

Actual Date of Submission:

Submittal Type

☐ Shop Drawing ☐ Sample

☐ Informational ☐ Deferred

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Paragraph No.	Drawing or Brochure Number (including Brochure page nos.)	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) submittal has been reviewed, checked, and approved for compliance with Contract Documents and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: Date:

Contractor (Authorized Signature)

REQUEST FOR INFORMATION/CLARIFICATION FORM

[Project Name]

			Page ____ of ____
DATE: ____	**CONTRACT NO.** ____		**RFI NO.** ____
TO:	**FROM:** ____	**REFERENCED OR AFFECTED DESIGN DOCUMENTS:**	
Resident Engineer		SPEC. SECTION: ____	
		DWG: ____	REV: ____
	ORIGINATOR: ____		
SUBJECT (for tracking purposes):			
DESCRIPTION OF REQUEST:			

Additional Info. Attached:	__ y __ n	Response Need By: ____	Signed: ____	Date: ____	
			Contractor		
Disposition Assigned to: ____		Signed: ____		Date: ____	
		Resident Engineer			
RESPONSE TO REQUEST:					
Signed: ____		Date: ____			
Concur with DE: ____		Date: ____			

1. Does the DE propose to change Contract Documents?	__ y	n	Distribution:
2. Additional information attached by responder?	__ y	__ n	RE
3. Are other contracts affected?	__ y	__ n	Document Control
4. Are site or Plant-wide issues involved?	__ y	__ n	DE
			RFI file/Original
Answered by FTM No. ____	Date: ____		CM
			AlexRenew PM

Contractor Submittal Routing Form

AlexRenew

Contract Name: *BUILDING L AND BUILDING G ELEVATOR REPLACEMENT PROJECT*
Contract No. *TBD*

Submittal No.
Contract No. | Spec. Section | Seq. No. | Rev.

Contractor: *TBD*

Received by RE
Date: *Rec'd from GC*

Distribution by RE:
Date: *To Reviewers*

Responsible Resident Engineer(RE): *name* / *firm*

Responsible Design Engineer (DE): *name* / *firm*

Title:

Keys:

A - ACTION: Complete Review , combine review comments by others and send to RE . RE then sends to contractor .

C - COMMENTS: Provide comments to RE.

I - INFORMATION: Transmittal Cover Sheet only.

Copies Distributed as shown below:

No. of Copies	Office	Key	Date Distributed by RE	Date Received	Date Completed & Returned to RE	Reviewer Signature
	Resident Engineer		To Reviewers			

	Approval Review Code:	A ____	AN ___	PA ___	RR ___	R ___	IR ___	
		Approved As Submitted	Approved As Noted	Partially Approved	Revise & Resubmitt	Rejected	Reviewed for Info. Only	See 01 33 00.1.03.D for Definitions

	Review Routing Tree:		Date Distributed by DE	Date Received	Date Completed & Returned to DE	Reviewer Signature

Response to Contractor FTM: Date:

SECTION 01 33 10
DOCUMENT MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. The Owner uses an electronic Construction Management Information System (CMIS) platform to manage the life cycle of project generated documents.

B. The Owner and the Contractor shall use CMIS for electronic submittal of all data and documents required by the Contract Documents as the platforms' workflow functions become operational. The CMIS platform site is owned and operated by the Owner. The joint use of this application is to:

1. Facilitate electronic exchange of information.
2. Expedite the review process for submitted documents.
3. Centralize project information.

C. Project communications shall be submitted and processed using e-Builder. This CMIS platform shall be the primary communication tool for all contact between the Owner and the Contractor.

D. Hard copies of all documents shall be provided in accordance with the Contract Documents.

1. CMIS platform shall be used to track and expedite processing of these items.
2. The Owner's acceptance of documents submitted via CMIS platform shall not relieve the Contractor from responsibility for any variation from the requirements of the Contract Documents.
3. In the event of a discrepancy between the electronic version and paper documents, the paper documents will govern.

E. If the Contractor is not familiar with CMIS platforms they are highly encouraged to search on-line.

1.02 USER ACCESS LIMITATIONS

A. The Owner shall provide the Contractor with a minimum of two (2) licenses of CMIS platform for participants designated by the Contractor to process submittals.

B. The Contractor shall assign at least one employee to become the CMIS Administrator who will participate in an on-site two-day training to become

an e-Builder "train the trainer" at which time that employee will train the remaining Contractors CMIS users.

C. User access and access rights to the CMIS platform site will be established, assigned and managed, by the Owner for the Contractor.

D. The Owner will provide the Contractor access to CMIS platform to allow submittal of documents including, but not limited to letters, shop drawings, submittals, meeting minutes, daily reports, drawings, specifications, memorandums, payment requisitions, change order requests, testing reports, warranties, guarantees and correspondence. Requests for Information will be directly entered into CMIS platform and generated by the application unless specified otherwise.

E. Sub-Contractors and suppliers will not have direct access to CMIS platform unless specified or approved otherwise by the Owner. Entry of information exchanged and transferred between the Contractor and sub-contractors and suppliers shall be the responsibility of the Contractor.

F. Access to modules is managed by permission levels configured by the Owner. Request to change permission levels must be submitted to the Owner through the Owner's Construction Manager.

1.03 OWNERSHIP OF DATA

A. All Data entered into CMIS platform shall be the sole property of the Owner.

1.04 COMPUTER REQUIREMENTS

A. CMIS platform is accessed via the internet through a web browser using Java run-time plug-in technologies. The Contractor shall use computer hardware and software that meets the requirements of the Owner and the CMIS platform system. The Owner staff will not operate, install, or troubleshoot any of the Contractor's hardware or software. The Contractor is solely responsible for the functionality of their systems.

B. Should the version of CMIS platform be upgraded during the Contract Time the Contractor will not upgrade their system(s) to meet the requirements of the upgraded application unless directed by the Owner. Upgrading of the Contractor's computer systems will not be justification for a time modification to the Contract.

C. The Owner will accept no liabilities arising from the Contractor's use of CMIS Platform.

1.05 CONTRACTOR RESPONSIBILITY

A. The Contractor shall be responsible for the validity of the information placed in CMIS platform as well as the abilities of their personnel to use the application.

B. An overview of the setup and submittal processes associated with CMIS platform will be presented to the Contractor. The Contractor is responsible for training their personnel in the use of CMIS platform, except as noted above in paragraph 1.1.A. All costs associated with the use of this system will be evenly distributed in the project overheads and spread across the duration of the contract; a separate added cost will not be allowed.

C. The Contractor shall meet with the Owner authorized representative within fifteen (15) days after the Notice of Selection to discuss the Contractor's use of CMIS Platform. An Owner CMIS platform "User Account Request Form" shall be filled out, signed by each user and submitted to the Owner to receive access to CMIS platform is required. The Contractor must also submit their Company data.

D. Notify the Owner immediately of any users who no longer require CMIS platform access. Their user account will be de-activated by the Owner and the license will again be available to the Contractor.

E. User access changes will take effect within 3 working days of receipt of the request from the Contractor, but no earlier than NTP.

F. The Contractor shall maintain a list of authorized the Owner network and CMIS platform accounts to reflect current authorized users. This list must be submitted to the Owner monthly.

G. The Contractor shall protect the security of the CMIS platform system by limiting access to authorized users only and not allow 'sharing' of usernames.

H. The Contractor shall comply with applicable laws and regulations regarding electronic transmission of documents requiring professional architects', engineers', geologists', and surveyors' stamps or signatures, including provision of hard copies of such documents as appropriate.

I. The Contractor nor his representatives, users, sub-consultants and subcontractors shall not enter, attach or store sensitive personal information such as Social Security numbers in CMIS Platform.

J. The Contractor will be allocated a minimum of two (2) user accounts and a maximum of five (5) user accounts based on the size of the contract.

K. Project Communications that require the signature of authorized persons will use either:

1. An approved "image" of the official signature affixed to the document. Also provide the Owner with the original signed hard copy/paper document.
2. An electronic Copy or electronic image of a fully executed document containing the required signatures. Also provide the Owner with the original signed hard copy/paper document.

1.06 INTERNET CONNECTIVITY

A. CMIS platform is a web-based environment and therefore subject to the inherent speed and connectivity issues of the internet service provider. The Contractor is responsible for his own connectivity to the internet outside of the Owner provided network. CMIS Platform's response time is dependent on user's equipment, including processor speed, network interface equipment, internet service provider access speed, etc. and current traffic on the internet.

B. The Owner will not be liable for any delays associated from the usage of CMIS platform or Owner furnished internet service including, but not limited to: slow response time, down time periods, connectivity problems, or loss of information on the Contractor's equipment.

C. Under no circumstances shall the usage of the CMIS platform be grounds for a time extension or cost adjustment to the contract.

D. Access to the internet for CMIS platform shall be operational upon receipt of the Notice to Proceed.

1.07 CMIS PLATFORM DOWNTIME

A. In the event that the CMIS Platform system is temporarily unavailable, the Contractor shall continue with Project Communications utilizing alternate secure means (e-mail) or hard copies to transmit and receive Project Communications.

B. Maintain records of all Project Communications during the CMIS Platform downtime and upload the records to CMIS Platform when it is operational.

C. Notify the Owner by telephone and/or email when CMIS Platform is not functional.

PART 2 PRODUCTS

2.01 CMIS PLATFORM NAME

A. The Owner has selected e-Builder to develop and implement an AlexRenew CMIS Platform.

B. Web-based electronic information management application owned and operated by the Owner.

PART 3 EXECUTION

3.01 CMIS PLATFORMUTILIZATION AND ROLLOUT EXAMINATION

A. Prior to providing access to CMIS platform an overview for the Contractor will be held at the site. The overview will include:

1. CMIS platform site location (URL) and log on process.
2. Navigation through CMIS Platform.
3. Uploading documents.
4. The Owner Submittal Review process.
5. The Owner RFI Review process.
6. The Owner Correspondence requirements.
7. Submittal of Payment Requisitions.
8. User Access Requirements.

B. The Contractor shall provide the Owner with completed account forms for all its intended CMIS Platform users and information on contacts such as key personnel, sub-consultants, sub-contractors, vendors, etc. as required by the Owner.

3.02 COMMUNICATIONS

A. All official documents attached to CMIS Platform shall be in one complete Portable Document Format (PDF) electronic file. These official PDF document files shall include duly executed signatures as required by the Contract. Supporting source document files may also be attached when so required.

B. Date that the Contractor enters a document into CMIS platform will be recorded as the date received by the Owner with the following exceptions:

1. All Project Communications submitted to the Owner through CMIS platform after 3:00 p.m., Eastern Time, Monday through Friday, will be acknowledged no earlier than the following regular business day.

2. For Project Communication purposes, business days and hours are defined as Monday through Friday, 8:00 a.m. to 3:00 p.m., Eastern Time, excluding Owner holidays.

END OF SECTION

SECTION 01 33 29
SUSTAINABLE CONSTRUCTION AND REPORTING

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor is responsible to track and log their efforts in achieving sustainable construction.

1.02 SUBMITTALS

A. Informational Submittals:

1. Sustainable construction log.

1.03 SUSTAINABLE CONSTRUCTION LOG

A. Format: Electronic format using the Attachment 1 log template included at the end of this Section. Identify reporting period, date of submittal and author.

B. Contents: Utilize the log to document all sustainable construction activities employed, reporting of quantitative metrics, lessons learned, innovative measures, recommended refinements, etc. to the requirements of the contract documents and other means utilized by the Contractor. Items for the log shall include the following, as applicable.

1. Reductions in paper use via electronic media for project and workforce meetings. Document recycled content in copy paper.
2. Use of City Water in lieu of bottled water for potable consumption.
3. Use of teleconferencing and videoconferencing for project meetings where attendees are not typically on site.
4. Use of any high efficiency equipment or lighting including electric or solar-powered equipment.
5. Compliance with controls specified in Section 01 10 00, General Requirements.
6. Compliance with operation of temporary facilities including field offices as described in Section 01 50 52, Contractor Facilities.
7. Percent of monthly construction and demolition debris that is recycled compared to debris disposed in landfill in accordance with Section 01 74 19, Waste Management.
8. Reductions in packaging from equipment and material suppliers or reuse and recycling of such packaging.
9. Employment of any carpooling, shuttling programs, Metro, or DASH use by field staff.

10. Percentage of Regional Materials:
    a. At the commencement of the Project, include a bill of materials list by Specification section in Divisions 3 through 44 that identifies the location of origin or manufacture of materials, products, and equipment to be provided in the Project. For minor items such as anchor bolts and small accessory items whereby the origin may fluctuate, denote the origin as "variable."
    b. The location of origin of equipment shall be defined as the point of final assembly of components into a product to be furnished.
    c. Based on material costs of all items, provide a calculation showing percent of materials that are anticipated to come from within 500 miles of the Project Site versus the total material cost of the Project. A detailed listing of material costs by item is not required.
    d. If procurement of major equipment or mechanical/electrical items that deviate from the original list is realized during the construction period, submit updated calculation to document the impact on the regional materials metric.
11. Total duration in number of weeks of active pile-driving activity.
12. Quantity of biodiesel fuel ordered for construction equipment versus regular diesel.
13. Use of any Tier 4 compliant construction equipment.
14. Report number of workdays lost in work schedule due to traffic congestion within plant Site resulting from Contractor's vehicles, other contractor vehicle, or Owner's fleet, if such incidents occur.
15. Running total of recordable and reportable safety incidents.
16. Other successes, etc.

1.04 REQUIREMENTS

A. Contractor Field Offices:

1. All lighting shall be compact fluorescent or LED lights.
2. Contractor shall enable sleep mode on computers, printers, copiers and fax machines.
3. Contractor shall turn down hot water heaters when trailer is to be unoccupied for an extended period of time.
4. Contractor shall provide and post information regarding Metro, DASH and VRE schedules and routes to promote use of mass transit for construction workers.

B. Lighting: Install and use lights only where needed to reduce light pollution.

C. Water Use: Minimize water use and utilize AlexRenew reclaimed water whenever possible. Coordinate reclaimed water usage and source locations with the Owner.

D. Cleaning Products: All cleaning products utilized in the Contractor's field office and at the construction site must be certified by Green Seal.

E. Fuel:

1. A minimum of 50 percent of fuel consumed on the Project for operation of heavy construction equipment shall be a blend of 20 percent biodiesel and 80 percent diesel (B20 blend). Blends of greater than 20 percent biodiesel are permitted. Biodiesel shall meet the requirements of ASTM D6751.
2. Biodiesel shall be delivered pre-blended from suppliers accredited by the BQ 9000 Quality Management Program of the National Biodiesel Board.
3. The Contractor shall follow the equipment manufacturer's guidelines for blend type, length of storage, and maintenance requirements.
4. Report all biodiesel use in the Contractor's and Subcontractors' equipment as instructed in Section 01 32 00, Construction Progress Documentation.

1.05 PUBLIC TRANSIT

A. Per Section 01 29 00, Payment Procedures, The Owner will subsidize 50 percent of costs associated with mass transit use by the Contractor's workers for those workers who elect to use Metro, DASH, VRE or other forms of public transit to commute to the Project Site.

1.06 WASTE MANAGEMENT

A. Report type and quantity of materials, by weight tickets, sent to salvage yards, recycling centers, and landfills, as specified in Section 01 74 19, Waste Management.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOTE USED)

3.01 SUPPLEMENTS

A. Sustainable Construction Log.

END OF SECTION

Sustainable Construction Log

Issued by: _____

Issue Date: _____

Project Number: _____ Construction Manager: _____

Report Period: _____ Project Start (month/year): _____

Waste Management:

Weight Recycled/Salvaged: _____ tons

Weight Landfilled:_____ tons

Total: ___Tons Percent Recycled/Salvaged: _____%

Heavy Equipment Fuel Received:

Biodiesel: _____ gallons

Regular Diesel:_____ gallons

Percent Biodiesel: ___ %

Safety:

Number of Recordable Incidents: _____

Number of Reportable Incidents: _____

Traffic:

Number of Days Lost to Site Traffic Congestion: _____

Documentation of Other Practices and Specified Metrics

Entry No.	Date	Item Description	Follow-up Actions/Recommendations
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

SECTION 01 43 33
MANUFACTURERS' FIELD SERVICES

PART 1 GENERAL

1.01 DEFINITIONS

A. Person-Day: One person for 8 hours within regular Contractor working hours.

1.02 SUBMITTALS

A. Informational Submittals:

1. Qualifications of Manufacturer's representatives.
2. Training Schedule: Submit, in accordance with requirements of this Specification, not less than 45 days prior to start of equipment installation and revise as necessary for acceptance.
3. Lesson Plan: Submit, in accordance with requirements of this Specification, proposed lesson plan not less than 60 days prior to scheduled training and revise as necessary for acceptance.

1.03 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system, with full authority by the equipment manufacturer to issue the certifications required of the manufacturer. Additional qualifications may be specified in the individual specification section.

B. Representative subject to acceptance by Owner and Engineer. No substitute representatives will be allowed unless prior written approval by such has been given.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

A. Furnish certified welding inspector(s) when these services are required by individual Specification sections.

B. Furnish manufacturers' services, when required by an individual specification section, to meet the requirements of this section.

C. Where time is necessary in excess of that stated in the Specifications for manufacturers' services, or when a minimum time is not specified, time required to perform specified services shall be considered incidental.

D. Schedule manufacturer' services to avoid conflict with other onsite testing or other manufacturers' onsite services.

E. Determine, before scheduling services, that conditions necessary to allow successful testing have been met.

F. Only those days of service approved by Engineer will be credited to fulfill specified minimum services.

G. When specified in individual specification sections, manufacturer's onsite services shall include:

1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of Contractor's assembly, erection, installation or application procedures.
2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.
3. Providing, on a daily basis, copies of manufacturers' representatives' field notes and data to Resident Engineer.
4. Revisiting the Site as required to correct problems and until installation and operation are acceptable to Engineer.
5. Resolution of assembly or installation problems attributable to or associated with respective manufacturer's products and systems.
6. Assistance during functional and performance testing, and facility startup and evaluation.
7. Training of Owner's personnel in the operation and maintenance of respective product as required.
8. Additional requirements may be specified elsewhere.

3.02 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

A. When so specified, a Manufacturer's Certificate of Compliance, a copy of which is attached to this section, shall be completed in full, signed by the entity supplying the product, material, or service, and submitted prior to shipment of product or material or the execution of the services.

B. Engineer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.

C. Such form shall certify that the proposed product, material, or service complies with that specified. Attach supporting reference data, affidavits, and certifications as appropriate.

D. May reflect recent or previous test results on material or product, if acceptable to Engineer.

3.03 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

A. When so specified, a Manufacturer's Certificate of Proper Installation form, a copy of which is attached to this section, shall be completed and signed by equipment manufacturer's representative.

B. Such form shall certify signing party is a duly authorized representative of manufacturer, is empowered by manufacturer to inspect, approve, and operate their equipment and is authorized to make recommendations required to ensure equipment is complete and operational.

3.04 TRAINING

A. General:

1. Furnish manufacturers' representatives for detailed classroom and hands-on training to Owner's personnel on operation and maintenance of specified product (system, subsystem, component) and as may be required in applicable Specifications.
2. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with Owner, and familiar with operation and maintenance manual information specified in Section 01 78 23, Operation and Maintenance Data.
3. Manufacturer's representative shall be familiar with facility operation and maintenance requirements as well as with specified equipment.
4. Furnish complete training materials, to include operation and maintenance data, to be retained by each trainee.

B. Training Schedule:

1. List specified equipment and systems that require training services and show:
   a. Respective manufacturer.
   b. Estimated dates for installation completion.
   c. Estimated training dates.
2. Multiple training sessions will be required. Provided for a minimum of five training sessions over a period of four separate weeks. Sessions may only be scheduled between the hours of 6:00 a.m. and 2:00 p.m.
3. Adjust schedule to ensure training of appropriate personnel as deemed necessary by Owner, and to allow full participation by manufacturers' representatives. Adjust schedule for interruptions in operability of equipment.
4. Coordinate with Section 01 32 00, Construction Progress Documentation, and Section 01 91 00, Equipment Systems.

C. Lesson Plan: When manufacturer or vendor training of Owner personnel is specified, prepare a lesson plan for each required course containing the following minimum information:

1. Title and objectives.
2. Recommended attendees (such as, managers, engineers, operators, maintenance).
3. Course description, outline of course content, and estimated class duration.
4. Format (such as, lecture, self-study, demonstration, hands-on).
5. Instruction materials and equipment requirements.
6. Methods used to validate training effectiveness (such as teach back, testing, etc.).
7. Resumes of instructors providing training.

D. Pre-Startup Training:

1. Coordinate training sessions with Owner's operating personnel and manufacturers' representatives, and with submission of operation and maintenance manuals in accordance with Section 01 78 23, Operation and Maintenance Data, and any other handouts, if applicable.
2. Complete at least 14 days prior to beginning of facility startup.

E. Post-startup Training: If required in Specifications, furnish and coordinate training of Owner's operating personnel by respective manufacturer's representatives.

F. Recording of Training Sessions:

1. Furnish audio and color recording of pre-startup and post-startup instruction sessions, including manufacturers' representatives' hands-on equipment instruction and classroom sessions.
2. Video training materials shall be produced by a qualified, professional video production company.
3. Use MP4 format, or other media approved by Owner, suitable for playback on YouTube.
4. Include one training session per individual record.
5. Submit a multiple-choice quiz with no more than ten (10) questions and include answers.

3.05 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this specification.

1. Manufacturer's Certificate of Compliance.
2. Manufacturer's Certificate of Proper Installation.

END OF SECTION

MANUFACTURER'S CERTIFICATE OF COMPLIANCE

OWNER: Alexandria Renew Enterprises

PRODUCT, MATERIAL, OR SERVICE SUBMITTED:

PROJECT NAME:

PROJECT NO:

Comments:_____

_____

_____

_____

_____

_____

I hereby certify that the above-referenced product, material, or service called for by the contract for the named project will be furnished in accordance with all applicable requirements. I further certify that the product, material, or service are of the quality specified and conform in all respects with the contract requirements and are in the quantity shown.

Date of Execution: _____, 20___

Manufacturer:_____

Manufacturer's Authorized Representative *(print)*: _____

_____

(Authorized Signature)

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER Alexandria Renew Enterprises EQPT SERIAL NO: _____

EQPT TAG NO: _____ EQPT/SYSTEM: _____

PROJECT NO: _____ SPEC. SECTION: _____

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

☐ Installed in accordance with Manufacturer's recommendations.

☐ Inspected, checked, and adjusted.

☐ Serviced with proper initial lubricants.

☐ Electrical and mechanical connections meet quality and safety standards.

☐ All applicable safety equipment has been properly installed.

☐ Functional tests.

☐ System has been performance tested and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments: _____

_____

_____

_____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate their equipment and (iii) authorized to make recommendations required to ensure equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____, 20___

Manufacturer:_____

By Manufacturer's Authorized Representative: _____

(Authorized Signature)

SECTION 01 45 16
CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the responsibilities pertaining to quality assurance (QA) and quality control (QC) of the Work and applies to construction work including identification, stocking and issue of materials and supplies; the entire process of construction; and the installation and testing of equipment.

B. Contractor is responsible for both the QA and QC of the Work, including that performed by Subcontractors and Suppliers in order to ensure all Work meets the requirements in the Contract Documents.

C. The Owner shall hold the final authority for determining acceptance of materials incorporated into this project.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
   a. D3740, Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
   b. E329, Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.

1.03 DEFINITIONS

A. Contractor Quality Control (CQC): The means by which Contractor ensures that the construction, to include that performed by subcontractors and suppliers, complies with the requirements of the Contract.

B. Quality Control (QC): The successful execution of a realistic plan which ensures that the required standards of quality construction are met and which will preclude problems resulting from poor quality or lack of quality. QC includes tests, inspections, procedures and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Contract enforcement services performed by Owner are not included.

C. Quality Assurance (QA): The performance of tasks that ensure that construction is performed according to Contract requirements. QA includes

activities, actions and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

D. Corrective Action Report (CAR): A written notice given by the Contractor to the Owner that defective or non-conforming work has been corrected or will be corrected within a mutually acceptable time frame.

E. Non-Conformance Notice (NCN): A written notice to the Contractor from either the Owner or the Contractor's QC staff to the effect that a deficiency has been found in the work such that that portion of the work is considered to be defective as failing to conform to the Contract Documents.

F. Nonconformance: A condition which deviates from Contract Document requirements and cannot be corrected to meet such requirements or otherwise requires an engineering determination.

G. CQC Manager: Member of Contractor's organization designated to manage and administer the Contractor's Construction CQC Program.

H. Audit: A planned and documented activity performed by qualified personnel to determine the adequacy and compliance of the QA/QC work done in the field with established procedures in the Quality Assurance and Quality Control Program, or applicable documents, and the effectiveness of their implementation.

I. Project Sponsor: Person responsible for assuring delivery of the project on schedule, on budget and meeting quality expectations. The Project Sponsor serves as a key link between the day-to-day project management team and the organization's executive management. The Project Sponsor is not responsible for day-to-day running of the project but helps the project manager facilitate the necessary organizational support needed to make strategic decisions and create a successful project.

J. Mockups: Full-size, physical examples assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution and to review construction, coordination, testing or operation. They are not Samples. Mockups establish the standard by which the Work will be judged.

K. Pre-construction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

L. Product Testing: Tests and inspections that are performed by a testing agency qualified to conduct product testing and acceptable to authorities having

jurisdiction, to establish product performance and compliance with industry standards.

M. Source Quality Control Testing: Tests and inspections that are performed at the source (i.e., plant, mill, factory or shop).

N. Field Quality Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

O. Testing Agency: An entity engaged to perform specific tests, inspections or both. Testing laboratory shall mean the same as testing agency.

P. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor to perform a particular construction operation, including installation, erection, application and similar operations.

1.04 SUBMITTALS

A. Informational Submittals:

1. CQC Plan: Submit, not later than 30 days after receipt of Notice to Proceed.
2. CQC Reports: an original and one copy in report form
   a. Submit daily the report referenced in 3.08.C
   b. Submit, weekly CQC Report, an original and one copy in report form.
   c. Issue monthly CQC report to the Owner within 7 calendar days of the end of the month being reported. Address the status of the CQC Program including procedure development, status of Subcontractor/Supplier CQC Programs and procedures, number of inspections and tests performed during the month, unsatisfactory and nonconforming items identified as well as those that remain open or were closed during the month, and any other quality problems experienced.

1.05 OWNER'S QUALITY ASSURANCE

A. All Work is subject to Owner's quality assurance inspection and testing at all locations and at all reasonable times before acceptance to ensure strict compliance with the terms of the Contract Documents.

B. Owner has the right but not the responsibility to perform inspections, witness tests, or otherwise monitor or assess the Work and activities. All products, materials, and equipment are subject to inspection by the Owner at the place of manufacture. Work to be done away from the Construction Staging Area may be subject to inspection by the Owner during its fabrication, manufacture,

testing, or before shipment. Give notice to the Owner of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Provide such notice in writing and deliver in ample time so that the necessary arrangements for inspections and witnessing of shop tests can be made.

C. Owner will, throughout the duration of construction, inspect construction materials, test materials, collect measurements and survey data, and monitor settlements to assure conformance with the Contract Documents and as a basis of acceptance. The Owner may conduct testing to verify earthwork compaction, verify concrete compressive strength, monitor dewatering water quality, monitor noise levels at nearby receptors, and perform independent settlement monitoring during construction activities.

D. The Contractor shall assist the Owner with the implementation of the Independent Assurance Sampling and Testing Program as required. Findings of all Independent Assurance observations and test results will be provided to the Contractor's CQC Manager by the Owner. Failing test results will be communicated immediately to the CQC Manager by the Owner or designated authorized representative. The Contractor shall immediately take corrective action to resolve any noted deficiencies.

E. Owner's quality assurance inspections and tests are for the sole benefit of Owner and do not:

1. Relieve Contractor of responsibility for providing adequate quality control measures;
2. Relieve Contractor of responsibility for damage to or loss of the material before acceptance;
3. Constitute or imply acceptance; or
4. Affect the continuing rights of Owner after acceptance of the completed Work.

F. The presence or absence of a quality assurance inspector does not relieve Contractor from any Contract requirement.

G. Promptly furnish all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Engineer.

H. Owner may charge Contractor for any additional cost of inspection or test when Work is not ready at the time specified by Contractor for inspection or test, or when prior rejection makes re-inspection or retest necessary. Quality assurance inspections and tests will be performed in a manner that will not unnecessarily delay the Work.

1.06 SPECIAL TESTS AND INSPECTIONS

A. Owner will engage a qualified testing agency and/or qualified personnel to conduct special tests and inspections required by authorities having jurisdiction and delegated to Owner to perform.

B. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.

C. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor, and the Contract Sum will be adjusted by Change Order.

D. These tests and inspections include:

1. Verifying that manufacturer maintains detailed fabrication and quality control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Submitting a certified written report of each test, inspection and similar quality control service to Owner with copy to Contractor and to authorities having jurisdiction.
3. Submitting a final report of special tests and inspections at Substantial Completion (including a list of unresolved deficiencies).
4. Interpreting tests and inspections and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
5. Retesting and re-inspecting corrected Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to the Contract Documents.

B. Maintain complete inspection records and make them available at all times to Owner and Engineer.

C. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product that complies with the Contract Documents. The system shall cover all construction and demolition operations, both onsite and offsite, including Work by subcontractors,

fabricators, suppliers and purchasing agents, and shall be keyed to the proposed construction sequence.

3.02 COORDINATION MEETING

A. After the Preconstruction Conference, but before start of construction, and prior to acceptance of the CQC Plan, schedule a meeting with Engineer and Owner to discuss the quality control system.

B. Develop a mutual understanding of the system details, including the forms for recording the CQC operations, control activities, testing, sampling, inspection administration of the system for both onsite and offsite Work, and the interrelationship of Contractor's management and control with the Owner's Quality Assurance.

C. There may be occasions when subsequent conferences may be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by Contractor.

3.03 QUALITY CONTROL ORGANIZATION

A. CQC System Manager:

1. Designate an individual within Contractor's organization who will be responsible for overall management of CQC and have the authority to act in CQC matters for the Contractor.
2. CQC System Manager may perform other duties on the Project.
3. CQC System Manager shall be an experienced construction person, with a minimum of 5 years of experience in a similar position on projects with scope.
4. CQC System Manager shall report to the Contractor's project sponsor or someone higher in the organization.
5. CQC System Manager shall be onsite during construction, including overtime or shiftwork. Periods of absence may not exceed 2 weeks at any one time.
6. Identify an alternate for CQC System Manager to serve with full authority during the System Manager's absence. The requirements for the alternate will be the same as for designated CQC System Manager.

B. CQC Staff:

1. Designate a CQC staff, available at the Site at all times during progress, with complete authority to take any action necessary to ensure compliance with the Contract. CQC staff members shall be subject to acceptance by Engineer.
2. CQC staff shall take direction from CQC System Manager in matters pertaining to QC.

3. CQC staff must be of sufficient size to ensure adequate QC coverage of Work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities.
4. The CQC staff may vary during any specific Work period to cover the needs of the Project. Add additional staff when necessary for a proper CQC organization.

C. Staff the QC Organization with technically competent personnel with freedom to make decisions without pressure or bias. Provide sufficient authority to ensure that quality requirements are consistently maintained and are independent from that portion responsible for production.

1. The Owner reserves its right to remove from the project either:
   a. QC staff that demonstrate a lack of ability to make decisions without pressure or bias, or
   b. Any Contractor personnel who are preventing or influencing the QC staff's freedom to make decisions without pressure or bias.
2. Any time lost or added expense to the project while staff are removed and replaced under this clause shall be non-compensable.

D. Organizational Changes: Obtain Engineer's acceptance before replacing any member of the CQC staff. Requests for changes shall include name, qualifications, duties, and responsibilities of the proposed replacement.

3.04 QUALITY CONTROL PHASING

A. CQC shall include at least three phases of control to be conducted by CQC System Manager for all definable features of Work, as follows:

1. Preparatory Phase:
   a. Notify Owner at least 48 hours in advance of beginning any of the required action of the preparatory phase.
   b. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager shall instruct applicable CQC staff as to the acceptable level of workmanship required in order to meet Contract requirements.
   c. Document the results of the preparatory phase meeting by separate minutes prepared by the CQC System Manager and attached to the QC report.

d. Perform prior to beginning Work on each definable feature of Work:
   1) Review applicable Contract Specifications.
   2) Review applicable Contract Drawings.
   3) Verify that all materials and/or equipment have been tested, submitted, and approved.
   4) Verify that provisions have been made to provide required control inspection and testing.
   5) Review Witness and Hold points identified by the Engineer of Record in the Contract Documents or in the CQC plan.
   6) Examine the Work area to verify that all required preliminary Work has been completed and is in compliance with the Contract.
   7) Perform a physical examination of required materials, equipment, and sample Work to verify that they are on hand, conform to approved Shop Drawing or submitted data, and are properly stored.
   8) Review the appropriate activity hazard analysis to verify safety requirements are met.
   9) Review procedures for constructing the Work, including repetitive deficiencies.
   10) Document construction tolerances and workmanship standards for that phase of the Work.
   11) Check to verify that the plan for the Work to be performed, if so required, has been accepted by Engineer.

2. Initial Phase:
   a. Accomplish at the beginning of a definable feature of Work:
      1) Notify Owner at least 48 hours in advance of beginning the initial phase.
      2) Perform prior to beginning Work on each definable feature of Work:
         a) Review minutes of the preparatory meeting.
         b) Check preliminary Work to verify compliance with Contract requirements.
         c) Verify required control inspection and testing.
         d) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Comparison with sample panels is appropriate.
         e) Resolve all differences.
         f) Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
      3) Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the QC report. Exact

location of initial phase shall be indicated for future reference and comparison with follow-up phases.

4) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3. Follow-up Phase:
   a. Perform daily checks to verify continuing compliance with Contract requirements, including control testing, until completion of the particular feature of Work.
   b. Daily checks shall be made a matter of record in the CQC documentation and shall document specific results of inspections for all features of Work for the day or shift.
   c. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of Work that will be affected by the deficient Work. Constructing upon or concealing nonconforming Work will not be allowed.
4. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be conducted on the same definable features of Work as determined by Owner if the quality of ongoing Work is unacceptable; or if there are changes in the applicable QC staff or in the onsite production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.05 CONTRACTOR QUALITY CONTROL PLAN

A. General:

1. Plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used.
2. An interim plan for the first 30 days of operation will be considered.
3. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of Work to be started.
4. Work outside of the features of Work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of Work to be started.
5. Plan shall use written QA/QC inspection and test procedures for all operations. Include instructions for performing the required inspection or test, which contain the accept/reject criteria for each inspection or test activity (i.e., applicable drawing, specification section, industry code or standard), establish the frequency for performing the inspection or test, and provide for recording the results of inspections and tests on checklists acceptable to the Owner. Keep these procedures current and available at all locations where inspections and tests are to be

performed. Ensure that both QC and QA activities are addressed in the inspection and testing procedures.

6. The CQC Plan shall incorporate all Witness and Hold points identified by the Engineer of Record in the Contract Documents. Witness and Hold points shall be identified in the construction process and the schedule where critical characteristics are to be measured and maintained and at points where it is nearly impossible to determine adequacy of either materials or workmanship once work proceeds past this point. Develop procedures for notification of the Owner for Witness and Hold points.
7. Subcontractors and Suppliers may implement their own SQC program if the program is approved by the Contractor and the Owner. Otherwise, the Subcontractor or Supplier will be instructed to implement the Contractor's QC Program on all Work performed and will perform the QC inspections of their Work and activities at their facilities.
8. The plan must maintain control over procurement sources to ensure that materials, equipment and services conform to specified requirements. Procurement documents must require Subcontractors and Suppliers to implement their own SQC Program or require them to implement the CQC Program. Comply fully with manufacturers' instructions, including completing each step in sequence. If the manufacturers' instructions conflict with Contract Documents, then the Contractor shall request clarification from the Owner before proceeding.
9. Establish means and methods for controlling the identification, inspection status, handling, and storage of raw and fabricated material. Maintain these controls from the time of receipt of the material until delivery to the Owner, in order to protect the material from damage, deterioration, loss or substitution.
10. Maintain control over construction and installation processes to assure compliance with specified requirements. Perform in-process and final inspection and testing of construction in accordance with written QA/QC inspection and test procedures to ensure that requirements in the Contract Documents have been met. The Contractor shall utilize the CMIS Platform once it is implemented, including the development of QC inspection and testing forms and reports, such that the program can be implemented, reviewed, monitored real-time, including statistical reporting. Record the results of in-process and final inspections on inspection checklists approved by the Owner.
11. Establish and maintain a Quality Assurance Auditing and Nonconformance Recovery Plan for uniform reporting, controlling, correction, disposition and resolution of nonconformance issues (including disputed nonconforming items) that may arise on the project and as required in this Section. The Plan will establish a process for review and disposition of nonconforming material, equipment or other elements of the Work as well as corrective action reporting. The Plan will specifically address recovery measures, such as increased QA and

QC testing frequency, the Contractor will undertake to achieve the desired quality Work product.

12. The CQC and SQC Programs are subject to periodic audit by the Owner to assure compliance with the Contract Documents.

B. Content:

1. Plan shall cover the intended CQC organization for the entire Contract and shall include the following, as a minimum:
    a. Organization: Description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three-phase control system (see Paragraph QC Phasing) for all aspects of the Work specified.
    b. CQC Staff: The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
    c. Letters of Authority: A copy of a letter to the CQC System Manager signed by an authorized official of the firm, describing the responsibilities and delegating sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop Work which is not in compliance with the Contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters will also be furnished to Owner.
    d. Record Document: Procedures to track revisions to the Contract Documents made via design change notice, RFI, Work Change, Directive, Field Order or Change Order to the Contract Drawings or Specifications. Procedure shall address version control and distribution, including the removal of outdated documents from circulation.
    e. Submittals: Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers and purchasing agents.
    f. Document Control: Procedures for managing, tracking, organizing, distributing, and retaining QC documentation
    g. Testing: Control, verification and acceptance testing procedures for each specific test to include the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.
    h. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.

i. Procedures for tracking deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
j. Reporting procedures, including proposed reporting formats; include a copy of the CQC report form.

C. Acceptance of Plans: Acceptance of the Contractor's basic and addendum CQC plans is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Owner reserves the right to require Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

D. Notification of Changes: After acceptance of the CQC plan, Contractor shall notify Engineer, in writing, a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to acceptance by Engineer.

3.06 CONTRACTOR QUALITY CONTROL REPORT

A. As a minimum, prepare a weekly CQC report for every 7 calendar days. Account for all days throughout the life of the Contract. Reports shall be signed and dated by CQC System Manager. Include copies of test reports and copies of reports prepared by QC staff.

B. Maintain current records of quality control operations, activities, and tests performed, including the Work of subcontractors and suppliers.

C. Records shall be on an acceptable form and shall be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:

1. Contractor/subcontractor and their areas of responsibility.
2. Operating plant/equipment with hours worked, idle, or down for repair.
3. Work performed today, giving location, description, and by whom. When a network schedule is used, identify each phase of Work performed each day by activity number.
4. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, and Follow-up). List deficiencies noted along with corrective action.
5. Material received with statement as to its acceptability and storage.
6. Identify submittals reviewed, with Contract reference, by whom, and action taken.
7. Offsite surveillance activities, including actions taken.
8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

9. List instructions given/received and conflicts in Drawings and/or Specifications.
10. Contractor's verification statement.
11. Indicate a description of trades working on the Project; the number of personnel working; weather conditions encountered; and any delays encountered.
12. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in file work and workmanship comply with the Contract.

3.07 SUBMITTAL QUALITY CONTROL

A. Submittals shall be as specified in Section 01 33 00, Submittal Procedures. The CQC organization shall be responsible for certifying that all submittals are in compliance with the Contract requirements. Owner will furnish copies of test report forms upon request by Contractor. Contractor may use other forms as approved.

3.08 TESTING QUALITY CONTROL

A. Provide all labor, equipment, and apparatus necessary for QC inspection and testing of the civil, structural, architectural, mechanical and electrical features/equipment/systems, and all other elements of Work as required by the Contract Documents and any applicable permits and codes.

B. Conduct testing, monitoring or inspection necessary for the progress and control of Work. Do not rely upon conformance inspection, testing or monitoring conducted by the Owner for progress and control of Work. Replace nonconforming Work.

C. Daily Reports. The Contractor shall make a daily written and verbal report to the Owner's designated representative advising of the status of the Work, the prior day's accomplishments, activity planned for the current day and for at least two subsequent days, and any problems or delays that may be anticipated.

D. Testing Procedure:

1. Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to Contract requirements. Perform the following activities and record the following data:
   a. Verify testing procedures comply with contract requirements.
   b. Verify facilities and testing equipment are available and comply with testing standards.
   c. Check test instrument calibration data against certified standards.

d. Verify recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
e. Documentation:
    1) Record results of all tests taken, both passing and failing, on the CQC report for the date taken.
    2) Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.
    3) Actual test reports may be submitted later, if approved by Engineer, with a reference to the test number and date taken.
    4) Provide directly to Engineer an information copy of tests performed by an offsite or commercial test facility. Test results shall be signed by an engineer registered in the state where the tests are performed.
    5) Failure to submit timely test reports, as stated, may result in nonpayment for related Work performed and disapproval of the test facility for this Contract.

E. Testing Laboratories: Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel shall meet criteria detailed in ASTM D3740 and ASTM E329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. Personnel performing concrete testing shall be certified by the American Concrete Institute (ACI).

3.09 COMPLETION INSPECTION

A. CQC System Manager shall conduct an inspection of the Work at the completion of all Work or any milestone established by a completion time stated in the Contract.

B. Punchlist:

1. CQC System Manager shall develop a punchlist of items which do not conform to the Contract requirements.
2. Include punchlist in the CQC report, indicating the estimated date by which the deficiencies will be corrected.
3. CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Owner.

4. These inspections and any deficiency corrections required will be accomplished within the time stated for completion of the entire Work or any particular increment thereof if the Project is divided into increments by separate completion dates.

END OF SECTION

SECTION 01 45 33
SPECIAL INSPECTION, OBSERVATION, AND TESTING

PART 1 GENERAL

1.01 SUMMARY

A. This section covers requirements for Special Inspection, Observation, and Testing required in accordance with Chapter 17 of the 2021 IBC and is in addition to and supplements requirements included in Statement of Special Inspections shown on Drawings.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Society of Civil Engineers (ASCE): 7, Minimum Design Loads for Buildings and Other Structures.
2. International Code Council (ICC):
   a. International Building Code (IBC).
   b. Evaluation Service (ICC-ES) Reports and Legacy Reports.

1.03 DEFINITIONS

A. Agencies and Personnel:

1. Agency Having Jurisdiction (AHJ): Permitting building agency; may be a federal, state, local, or other regional department, or individual including building official, fire chief, fire marshal, chief of a fire prevention bureau, labor department, or health department, electrical inspector; or others having statutory authority. AHJ may be Owner when authorized to be self-permitting by governmental permitting agency or when no governmental agency has authority.
2. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.
3. Registered Design Professional in Responsible Charge: An individual who is registered or licensed to practice their respective design profession as defined by statutory requirements of professional registration laws of state or jurisdiction in which Project is to be constructed.
4. Special Inspector: Qualified person employed by Owner who will demonstrate competence to the satisfaction of AHJ for inspection of a particular type of construction or operation requiring Special Inspection.

B. Statement of Special Inspections: Detailed written procedure contained on Drawings establishing systems and components subject to Special Inspection,

Observation, and Testing during construction, type and frequency of testing, extent and duration of Special Inspection, and reports to be completed and distributed by Special Inspector.

C. Special Inspection:

1. Special Inspection: Inspection required of materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved Contract Documents and referenced standards.
2. Special Inspection, Continuous: Full-time observation of work requiring Special Inspection by an approved Special Inspector who is present in area where the Work is being performed.
3. Special Inspection, Periodic: Part-time or intermittent observation of the Work requiring Special Inspection by an approved Special Inspector who is present in area where the Work has been or is being performed, and at completion of the Work.

D. Structural Systems and Components:

1. Diaphragm: Component of structural lateral load resisting system consisting of roof, floor, or other membrane or bracing system acting to transfer lateral forces to vertical resisting elements of structure.
2. Drag Strut or Collector: Component of structural lateral load resisting system consisting of diaphragm or shear wall element that collects and transfers diaphragm shear forces to vertical force-resisting elements or distributes forces within diaphragm or shear wall.
3. Seismic-Force-Resisting System: That part of structural lateral load resisting system that has been considered in the design to provide required resistance to seismic forces identified on Drawings.
4. Shear Wall: Component of structural lateral load resisting system consisting of a wall designed to resist lateral forces parallel to plane of the wall. Unless noted otherwise on Drawings, load-bearing walls with direct in-plane connections to roof and floors shall be considered to be shear walls.
5. Wind Force Resisting System: That part of the structural system that has been considered in the design to provide required resistance to wind forces identified on Drawings.

E. Nonstructural Components:

1. Architectural Component Supports: Structural members or assemblies of members which transmit loads and forces from architectural systems or components to structure, including braces, frames, struts, and attachments.
2. Electrical Component Supports: Structural members or assemblies which transmit loads and forces from electrical equipment to structure,

including braces, frames, legs, pedestals, and tethers, as well as elements forged or cast as part of component for anchorage.

3. Mechanical Component Supports: Structural members or assemblies which transmit loads and forces from mechanical equipment to structure, including braces, frames, skirts, legs, saddles, pedestals, snubbers, and tethers, as well as elements forged or cast as part of component for anchorage.

F. Professional Observation:

1. Does not include or waive responsibility for required Special Inspection or inspections by building official.
2. Requirements are indicated on Statement of Special Inspections provided on Drawings.
3. Geotechnical Observation: Visual observation of selected subgrade bearing surfaces and installation of deep foundation elements by a registered design professional for general conformance to Contract Documents.
4. Structural Observation: Visual observation of structural system(s) by a registered design professional for general conformance to Contract Documents.

1.04 SUBMITTALS

A. Informational Submittals:

1. Fabricator's Certificate of Compliance: Form shall be completed by entity responsible for shop fabrication of structural load-bearing members and assemblies. Refer to Article Supplements located at end of section.

1.05 STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS

A. Designated Systems for Inspection:

1. Seismic-force-resisting systems designated under IBC Section 1705 and subject to Special Inspection under Section 1705: None required.
2. Wind-force-resisting systems designated under IBC Section 1705: None required.
3. Architectural, Mechanical, and Electrical Components subject to Special Inspection under IBC Section 1705.12.5 and 1705.12.6 for Seismic Resistance: None required.

B. Statement of Special Inspections:

1. As included in Drawings and in support of building permit application, Project-specific requirements were prepared by Registered Design Professional in Responsible Charge. The following identifies elements

of inspection, observation, and testing program to be followed in construction of the Work:

a. Special Inspection and testing required by IBC Section 1705 and other applicable sections and referenced standards therein.
b. Type and frequency of Special Inspection required.
c. Type and frequency of testing required.
d. Required frequency and distribution of testing and Special Inspection reports to be distributed by Special Inspector to Engineer, Contractor, building official, and Owner.
e. Geotechnical Observation to be Performed: Not required for this Project.
f. Structural Observations to be Performed: Not required for this Project.

C. Special Inspection and associated testing of shop fabrication and field construction will be performed by an approved accredited independent agency or by Authority Having Jurisdiction's (AHJ) approved, qualified inspection staff. Owner will secure and pay for services of agency to perform Special Inspection and associated testing.

D. Code required Special Inspection with associated testing as provided in Statement of Special Inspections on Drawings and further provided in this section, is for benefit of Owner and does not:

1. Relieve Contractor of responsibility for providing adequate quality control measures.
2. Relieve Contractor of responsibility for damage to or loss of material before acceptance.
3. Constitute or imply acceptance.
4. Affect continuing rights of Owner after acceptance of completed Work.

E. The presence or absence of code required Special Inspector does not relieve Contractor from Contract requirements.

F. Contractor is responsible for additional costs associated with Special Inspection and Testing when Work is not ready at time identified by Contractor and Special Inspectors are onsite, but not able to provide contracted services.

G. Contractor is responsible for associated costs for additional Special Inspection and Testing by Special Inspectors required because of rejection of materials of in place Work that cannot be made compliant to Contract Document without additional inspections and testing.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Requirements of the Statement of Special Inspections are provided by the Owner. All other testing and inspections, unless noted otherwise, are provided by Contractor.

B. Provide access to shop or Site for Special Inspection and Testing requirements.

C. Notify Engineer in advance of required Special Inspection no later than 48 hours prior to date of Special Inspection.

D. Provide access for Special Inspector to construction documents.

E. Retain special inspection records on-site to be readily available for review.

F. Cooperate with Special Inspector and provide safe access to the Work to be inspected.

G. Submit Fabricator's Certificates of Compliance for approved fabricators.

H. Provide reasonable auxiliary services as requested by the Special Inspector. Auxiliary services required include, but not limited to:

1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests to assist the Special Inspector in performing test/inspections.
2. Providing storage space for the Special Inspector’s exclusive use, such as for storing and curing concrete test samples and delivery of samples to testing laboratories.
3. Providing the Special Inspector with access to all approved submittals.
4. Providing security and protection of samples and test equipment at the Project Site.
5. Provide samples of materials to be tested in required quantities.

I. Materials and systems shall be inspected during placement where Continuous Special Inspection is required.

J. Where Periodic Special Inspection is indicated in the Statement of Special Inspections:

1. Schedule inspections for either during or at completion of their placement or a combination or both.

2. Schedule periodically inspected Work (either inspected during or after its placement) so that corrections can be completed and re-inspected before Work is inaccessible.
3. Sampling a portion of the Work is not allowed. Schedules shall provide for inspection of all Work requiring periodic inspection.

3.02 SUPPLEMENTS

A. The supplement listed below, following "End of Section," is part of this specification:

1. Fabricator's Certificate of Compliance.

END OF SECTION

FABRICATOR'S CERTIFICATE OF COMPLIANCE

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per section 1704.2.5 of 2021 IBC must submit Fabricator's Certificate of Compliance at the completion of fabrication.

_____
(Project)

_____
(Fabricator's Name)

_____
(Business Address)

_____
(Certification or Approval Agency)

_____
(Certification Number)

_____
(Date of Last Audit or Approval)

Description of structural members and assemblies that have been fabricated:

_____

_____

_____

_____

_____

I hereby certify that items described above were fabricated in strict accordance with approved construction documents.

_____
(Name and Title) type or print

_____
(Signature and Date)

Attach copies of fabricator's certification or building code evaluation service report and fabricator's quality control manual

SECTION 01 52 00
CONTRACTOR FACILITIES

PART 1 GENERAL

1.01 SUMMARY

A. Work specified in this section includes temporary field offices, temporary storage units, power, water, heating, cooling, ventilation, sanitary facilities, fire protection, barriers and enclosures, and easements and rights of way.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
2. VOSH, Virginia Occupational Safety and Health Program.

1.03 SUBMITTALS

A. Informational Submittals:

1. Copies of the Contract Limits and Construction Access Plan that shall be posted in the construction trailer and given to each subcontractor before they commence work.
2. Temporary Construction Submittals, as applicable:
   a. Contractor's field offices, storage yard, and storage building plans, including gravel surfaced area.
   b. Electric power supply and distribution plans.
   c. Water supply and distribution plans.
   d. Sanitary facilities.
   e. Fencing and protective barrier locations and details.
   f. Staging area location plan.

1.04 GENERAL

A. Contractor shall maintain temporary field offices near the work for his own use during the period of construction at which readily accessible copies of all Contract documents, including approved transmittals, shall be kept.

B. NOT USED

C. The Contractor is responsible to furnish and install any other storage units or field offices that they may require for their workers, materials or equipment. The location of any added offices/storage units shall be located within the

Contractor's assigned staging areas where it will neither interfere with the progress of the work nor with plant operations and shall be subject to AlexRenew's approval. Furthermore, use in the vicinity of the Dominion Energy transmission lines shall be subject to the permit restrictions specified in the Contract Documents.

D. NOT USED

E. Furnish, install and maintain all temporary utilities required for the Work, except as allowed herein, and remove upon completion of Work.

F. Furnish, install and maintain all construction aids required for the Work, except as allowed herein, and remove upon completion of Work.

G. Furnish, install and maintain fences and barriers as required for protection of the public, property and Work.

H. Provide storage sheds as required for storage of materials and equipment.

I. Provide site security plan per Section 01 15 20, Construction Security.

J. Contractor shall obtain and pay all costs, fees, etc. for the hauling, building, setting, maintaining, permitting, connecting and removal of the any added temporary field trailer/storage/shed unit.

1.05 MOBILIZATION

A. Mobilization includes, but is not limited to, these principal items:

1. Obtaining required permits.
2. Moving Contractor's field office and equipment required for first month operations onto Site.
3. Installing temporary construction power, wiring, and lighting facilities.
4. Providing onsite Internet service and telephones.
5. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
6. Arranging for and erection of Contractor's work and storage yard.
7. Posting VOSH required notices and establishing safety programs and procedures.
8. Having Contractor's superintendent at Site full time.

B. Use area designated for Contractor's temporary facilities as shown on Drawings.

1.06 NOT USED

1.07 TEMPORARY POWER

A. Contractor shall arrange for and pay all costs associated with temporary power service either from the local utility and/or portable engine-generator for any of their other trailers/storage units/staging areas.

B. Contractor shall pay all costs for installation and removal of service and power used which in not incorporated into permanent power system.

C. Temporary electrical work shall meet the requirements of the National Electric Code and utility's requirements.

D. Connection to existing infrastructure:

1. Convenience outlets are located throughout existing buildings and existing processing facilities and may be utilized by the Contractor for incidental small 120-volt appliances and hand tools.
2. Additional power may be obtained from motor control centers and power distribution panel boards located within some buildings and facilities with the approval of the Owner.
3. The Contractor shall furnish and install a KWH meter acceptable to the Owner for all temporary electrical service. Where no spare circuit breakers are available or the Contractor can add none, the Contractor may be allowed to tap the bus with the Owner's approval. The Contractor shall furnish and install all equipment including disconnects, circuit breakers, overload devices, ground fault protection, transformers and panel boards necessary to install and utilize the source in accordance with the NEC and City of Alexandria Electrical Code.
4. All requests to utilize the Owner's electrical distribution system shall be in writing and shall include detailed plans for approval by the Owner. The Owner at no expense to the Contractor will furnish the electrical energy from the power sources described herein. However, at no time shall the total load from all sources exceed 100 kVA or 120 amp at 480V, 3-phase.
5. The Owner does not guarantee that the power from such sources will be continuous nor does the Owner warrant the condition of the power equipment or the power characteristics.
6. Power sources of sufficient characteristics and capacity may not be available at all work areas. The Contractor shall be responsible for the transmission of power to all work areas from approved sources.
7. The Contractor shall furnish and install all cables, wiring, extensions cords, connections, outlets, switches, lamps, fuses, controls, accessories and incidentals necessary to utilize and distribute power as required.

8. Cable shall be mounted on poles that do not interfere with any construction or the Owner operations. Before installing such equipment, the Contractor shall submit detailed plans for approval by the Owner.
9. The Contractor shall provide sufficient temporary electrical lighting at all work areas where there is not sufficient light from any permanent lighting system.
10. The Contractor shall exercise care in his operations to prevent damage to the Owner's electrical equipment. All such damage shall be repaired, or the equipment replaced, at the sole expense of the Contractor.
11. The Contractor shall stop using a power hookup if his activities cause an overload or impact operation of online facilities.
12. All costs for temporary construction power and lighting shall be at the sole expense of the Contractor including all power sources and requirements above those described herein.
13. The Contractor shall remove all temporary power connections at the conclusion of the project and existing equipment shall be restored to the condition prior to construction at no additional cost to the Owner.

1.08 TEMPORARY LIGHTING

A. Provide lighting that meets or exceeds VOSH requirements.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails and lamps as required.

C. Maintain lighting and provide routine repairs.

D. Permanent building lighting may be utilized during construction.

1.09 TEMPORARY HEAT, COOLING AND VENTILATION

A. Contractor shall provide temporary heat, cooling and ventilation as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage due to temperature or humidity.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1. Provide temporary ventilation to maintain 12 air changes per hour in the pump station screen room and compactor room during construction.

C. Provide and pay for devices and operate them as required to maintain specified conditions for construction operations.

D. Contractor shall pay all costs of installation, maintenance, operation, removal and for fuel and power consumed.

1.10 TEMPORARY TELEPHONE AND HIGH-SPEED INTERNET SERVICE

A. NOT USED

1.11 TEMPORARY WATER SUPPLY

A. Provide service required for construction operations. Extend branch piping with outlets located so that water is available by use of hoses.

B. Contractor shall provide all drinking water required by construction personnel.

C. All items installed in the project that are indirectly or directly in contact with potable water are to comply with National Sanitation Foundation (NSF) Standards.

D. Contractor shall pay all costs for the installation, maintaining, and removal of service at the completion of construction.

E. Contractor shall pay utility company directly for all charges, unless waived by AlexRenew.

F. Work in Owner Remote Facilities:

1. The Contractor shall obtain a permit from a City of Alexandria Code permit (Monday through Friday, 8:00 a.m. to 5:00 p.m.) and coordinate with the Virginia-American Water Company (VAWC) Operations Department, telephone number 703-706-3870 between the hours of 7 a.m. and 3:30 p.m. to use potable water for construction purposes from public hydrants or to connect to the water system with a temporary tap.
2. If the Owner determines that fire hydrant water may be used, the Contractor will be charged the current fire hydrant use charge per working day.
3. If the Owner determines a temporary water main tap is required, the Contractor shall excavate a pit for a tap as directed, excavate the trench and install water service piping.
4. A temporary water tap requires the payment of the current water tap fee plus the additional fee for the water tap removal, the Owner will make the tap and will furnish and install a meter at no additional cost to the Contractor.
5. At completion of the Contract, the Contractor shall excavate and remove Contractor water service piping and provide excavation necessary for the meter and tap removal by the Owner. After the Owner has completed the removals, the Contractor shall backfill and restore the area.
6. The Owner will keep an account for direct payment by the Contractor of water and sewer charges.

7. The Owner will provide a meter on water services to the Contractor's Field Office and the Engineer's Facilities (field office). The Contractor will not be charged for this water usage.

1.12 TEMPORARY SANITARY FACILITIES

A. Contractor shall provide sanitary facilities:

1. As required by laws and regulations.
2. Not less than one facility.
3. Not less than one facility for every 25 employees of Contractor and subcontractor at the site.

B. Contractor shall service, clean and maintain facilities and enclosures.

C. Contractor shall pay all costs associated with the installation, maintain and removal of facilities and enclosures.

D. Use of Owner's existing sanitary facilities by construction personnel will not be allowed.

1.13 TEMPORARY FIRE PROTECTION

A. Observe and enforce throughout the work all requirements of the City of Alexandria, Local, State and Insurance authorities to minimize fire hazards.

B. Remove combustible refuse from within each building daily.

C. Provide fire extinguishers as required by the local fire department and city ordinances.

1.14 BARRIERS

A. Provide as required to control access to active construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide 6-foot-high commercial grade chain link fence around storage areas; equip with vehicular and pedestrian on outside gates with locks.

C. Provide barricades and covered walkways as required by governing authorities for public rights of way and for public access to existing building.

D. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and ponding or continuous running water. Protect from staining on trunk and branches. Do not disturb existing soil at base or within drip line in any manner.

1.15 ENCLOSURES

A. Provide temporary weather tight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary heating, and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.

B. Provide temporary partitions and ceilings as required to separate work areas from AlexRenew occupied areas, to prevent penetration of dust and moisture into AlexRenew occupied areas, to prevent damage to existing areas and equipment. Construction: Framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces; Flame Spread Rating of 25 in accordance with ASTM E84; paint surfaces exposed to view in AlexRenew occupied areas.

1.16 PROTECTION OF INSTALLED WORK

A. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.

B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects, and storage.

C. Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn and landscaped areas.

1.17 SECURITY

A. Per Section 01 15 20, Construction Security.

1.18 PARKING

A. Per Section 01 55 00, Vehicular Access and Parking.

B. Provide temporary surface parking areas to accommodate construction personnel.

C. When site space is not adequate, provide additional off-site parking and shuttle transportation.

1.19 PROGRESS CLEANING

A. Per Section 01 74 00, Cleaning.

B. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.

C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

D. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.

E. Remove waste materials, debris and rubbish from site weekly and dispose off-site.

F. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.

G. At least weekly, brush sweep entry drive, roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

1.20 ADDED FIELD OFFICES AND SHEDS

A. Additional Field Trailers for Workers, if needed:

1. All trailers shall be anchored by a tie down system that meets or exceeds building codes.
2. Fire Extinguishers, Smoke and Fire alarms shall be properly installed and maintained.
3. Contractor shall provide documentation of a benefit of occupancy inspection of all trailers to AlexRenew Department of Occupational Safety and Health.
4. Contractor shall post emergency evacuation map, primary and secondary assembly locations.
5. Provide signage of the location of all utilities into the trailer.
6. A sign shall be mounted on the trailer or building that shows:
   a. Company Name.
   b. Emergency Point of Contact.
   c. 24-hour Emergency Telephone Number.

B. Storage Sheds for Tools, Materials, and Equipment: Weather tight, with heat and ventilation for Products requiring controlled conditions, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations to a depth of 2 feet; grade site as indicated.

Restore existing facilities used during construction as specified, or to original, condition.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Maintain and operate systems to assure continuous service.

B. Modify and extend systems as work progress requires.

C. Keep all construction vehicles, equipment, trailers and machinery clear of the fire lanes and fire hydrants. Ensure that deliveries of equipment or supplies in the fire lanes are quickly unloaded and the vehicles moved as soon as possible.

3.02 CONTRACTOR FIELD OFFICES

A. Meet requirements specified in Section 01 33 29, Sustainable Construction and Reporting.

3.03 STORAGE YARDS AND BUILDINGS

A. Coordinate storage requirements with Section 01 61 00, Common Product Requirements.

B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions within the Contractor's storage and administration area, as shown on the Drawings.

C. Temporary Storage Buildings:

1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building, meeting safety standards.

3.04 STAGING AREAS

A. The staging area for the Contractor is shown on the Drawings.

3.05 TEMPORARY UTILITIES

A. Power: Electric power will be available as shown. Determine type and amount available and make arrangements for obtaining temporary electric power service, metering equipment, and pay costs for electric power used during Contract period, except for portions of the Work designated in writing by Engineer as substantially complete.

B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work, and all normal routine plant and operations maintenance.

1. Follow manufacturer's guidelines for positioning of floodlights.
2. Install and use lights only where needed to reduce light pollution. All lighting requirements established by VOSH and needed for health and safety must be followed.
3. Utilize motion sensors for security lighting outside of construction zones.

C. Heating, Cooling, and Ventilating:

1. Sequence construction such that new heating, cooling, and ventilating equipment is installed and functional prior to installation of sensitive electrical, instrumentation, and other equipment.
2. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage because of temperature or humidity. Costs for temporary heat shall be borne by Contractor responsible for constructing structure or building as specified in Section 01 11 00, Summary of Work.
3. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases. Provide additiona ventilation as specified.
4. Pay costs of installation, maintenance, operation, removal, and fuel consumed.
5. Provide portable unit heaters, complete with controls, electric-, oil-, or gas-fired, and suitably vented to outside as required for protection of health and property. Use of electric-fired units is encouraged.
6. If permanent natural gas piping is used for temporary heating units, do not modify or reroute gas piping without approval of utility company. Provide separate gas metering as required by utility.

D. Water:

1. Hydrant Water:
   a. Is available from nearby hydrants. Secure written permission for connection and use from water department and meet requirements for use. Install an acceptable metering device and pay Virginia American Water for water used at the prevailing rates of the utility provider. Notify fire department before obtaining water from fire hydrants.
   b. Use only special hydrant-operating wrenches to open hydrants. Make certain hydrant valve is open full, since cracking valve causes damage to hydrant. Repair damaged hydrants and notify appropriate agency as quickly as possible. Hydrants shall be completely accessible to fire department at all times.
2. Contractor will provide a place of temporary connection for drinking water at Site. Provide temporary facilities and piping required to bring water to point(s) of use and remove when no longer needed. Install an acceptable metering device and pay for water used at the prevailing rates of the utility provider.
3. Provide a means to prevent water used for testing from flowing back into source pipeline.

E. Sanitary and Personnel Facilities:

1. Provide and maintain facilities for Contractor's employees, Subcontractors, and other onsite employers' employees. Service, clean, and maintain facilities and enclosures.
2. Use of Owner's existing sanitary facilities by construction personnel will not be allowed.

F. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

3.06 CONSTRUCTION AIDS

A. Contractor shall relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of AlexRenew.

B. Contractor shall completely remove temporary materials, equipment and services at completion of the project.

C. Contractor shall clean and repair damages caused by installation or by use of temporary facilities.

1. Remove foundations and underground installations for construction aids.
2. Grade the areas of the site affected by temporary installations to required elevations and slopes and clean the area.

3.07 BARRIERS

A. Contractor shall install facilities with a neat and uniform appearance, structurally adequate for the required purposes.

B. Contractor shall completely remove barriers, including foundations, when construction has progressed to the point that they are no longer needed or required.

C. Contractor shall clean and repair damage caused by installation, fill and grade the areas of the site to required elevations and slopes and clean the area.

3.08 FIELD SANITARY FACILITIES

A. The Contractor, from the commencement of the job, shall provide sufficient sanitary toilet room facilities for the use of all personnel on the job.

B. The facilities shall be kept in sanitary condition, and at the completion of the job shall be cleaned out and removed.

C. The sanitary facilities shall conform to AlexRenew requirements. The Contractor shall prohibit and prevent the committing of nuisances by his employees on the work site.

D. The Contractor and Subcontractor personnel shall not use AlexRenew toilet facilities

END OF SECTION

SECTION 01 54 50
CONSTRUCTION SAFETY

PART 1 GENERAL

1.01 SUMMARY

A. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The specified safety provisions are the minimum requirements. Take all additional necessary precautions for the safety of, and provide the necessary protection to prevent damage, injury or loss to:

1. All employees on the Work and other persons who may be affected thereby;
2. All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the sites; and
3. Other property at the sites or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

B. Comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for its safety and protection. Notify owners of adjacent utilities when prosecution of the Work may affect them. All damage, injury or loss to any property caused directly or indirectly, in whole or part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by Contractor, except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of the Owner or Design Professional Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attribute, directly or indirectly, in whole or in part, to the fault or negligence of Contractor. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until Substantial Completion.

C. Comply with Contractor's and Subcontractor's Insurance Requirements.

D. All work shall conform to the requirements of the Occupational Safety and Health Act (OSHA) and the requirements under the Virginia Occupational Safety and Health (VOSH) program. Any reference to OSHA 1910 or 1926 requirements shall also be considered a reference to VOSH 1910 or 1926.

E. No section or description in these documents shall be construed to replace, modify or supersede requirements of other codes, specifications and/or ordinances referenced throughout the document. If a conflict occurs between the referenced regulations and these documents, the more stringent shall govern.

F. Address the AlexRenew Safety & Health Standard Operating Procedures (see Supplement after End of Section) in your safety program as it relates to interfacing with the Plant.

1.02 SPECIFIC REQUIREMENTS

A. Contractor's Site Safety Officer:

1. The Contractor shall be responsible for the safety of the Contractor's employees, Owner's personnel, and all other personnel at the sites of the Work. The Contractor shall designate a competent Site Safety Officer(s) who shall be responsible for the supervision of the project safety requirements. The Site Safety Officer(s) shall be on the job at all times while work is in progress.
2. The Contractor Site Safety Officer(s), in addition to meeting the requirements of "Qualified Person" as defined by OSHA, must also meet the requirements specified in the Construction Safety & Health Manual for Contractors (see Attachment 1). A resume must be provided and accepted by the Owner prior to the start of work. The Backup Safety Person should be equally credentialed, depending on job complexity, size and any other pertinent factors.
    a. The Site Safety Officer sole responsibility and duties shall be project safety, unless the total bid price is less than $25M, in which case, the Site Safety Officer(s) may be assigned to other duties, provided these duties do not impact his ability to perform the requirements of the Site Safety Officer, unless otherwise specified.
    b. The Site Safety Officer(s) shall be provided with an appropriate office at the Contractor's office facility at the Plant site to maintain and keep available safety records and up-to-date copies of all pertinent safety rules and regulations; and to maintain adequate supplies of safety equipment.
3. As a minimum, the Contractor shall provide a Site Safety Officer who is trained in accident prevention and first aid and certified in cardiopulmonary resuscitation (CPR).
4. The Contractor's Site Safety Officer shall:
    a. Be completely familiar with all applicable health and safety requirements of all governing legislation, and ensure compliance with same.
    b. Be experienced in heavy construction safety programs and processes.
    c. Schedule and conduct safety meetings and safety training programs as required by law for all personnel engaged in the Work.
    d. Post all appropriate notices regarding safety and health regulations at locations which afford maximum exposure to all personnel at the job site.
    e. Post the name, address, and hours of the nearest medical doctor; name and address of nearby clinics and hospitals; and the telephone numbers of the fire and police departments.

f. Post appropriate instructions and warning signs with regard to all hazardous areas or conditions.
g. Have proper safety and rescue equipment adequately maintained at the Plant site and readily available for any contingency.
    1) This equipment shall include such applicable items as: proper fire extinguishers, first aid kits, eyewash stations, safety lanyards and harnesses, stretchers, life savers (when working over water), oxygen breathing apparatus, resuscitators, gas detectors, oxygen deficiency indicators, explosion meters, and any other equipment mandated by law.
    2) This equipment shall be maintained at the Contractor Site Safety Officer's office at the Plant site, or at the actual Work areas, or at both locations as determined most appropriate in the judgement of the Site Safety Officer.
h. Make inspections at least once daily to ensure that all machines, tools and equipment are in safe operating condition; and that all work methods are free of hazards.
i. Submit copies of all safety records along with all safety inspection reports and certifications from regulating agencies and insurance companies.
j. Notify Construction Manager (CM) of accidents immediately, followed by a detailed written report.
k. Notify CM of any accident claim against the Contractor or any Subcontractor immediately, followed up by a detailed written Review safety aspects of the Contractor's submittals as applicable.
l. Be responsible for coordinating and executing site Emergency Action procedures per client and applicable regulatory body requirements.

B. Site Safety and Health Plan (SSHP):

1. The Contractor shall provide and maintain an SSHP at all times at the project site.
2. The Contractor shall develop the SSHP to specifically address the scope of work to be performed by the Contractor.
3. The Plan shall be task-specific/activity-specific for the proposed work and be developed in compliance with requirements defined in 29 CFR 1910 and 1926 and other supporting and applicable OSHA standards as well as those standards of the Environmental Protection Agency.
4. The Contractor shall have the responsibility for defining protective measures in the SSHP that protects the environment, site personnel and the general public. The plan shall provide requirements for protecting all onsite participants, including the Contractor, lower-tier-subcontractors, and Owner’s personnel.
5. The SSHP shall address requirements for the protection and orientation of vendors and other visitors who may enter the site.

6. The SSHP shall include requirements for protecting the general public and the environment from offsite emissions or physical hazards originating onsite.
7. The SSHP shall address site hazards related to environmental requirements, construction safety and occupational health.
    a. The Plan shall identify each risk, assess the hazard and specify actions and controls.
    b. The Plan shall define organization, responsibilities, policies, and ownership criteria. Specifically the Plan shall include but not limited to general safety; environmental, health and safety training for employees and subcontractors; task-specific hazard analysis; task-specific personnel protective equipment (e.g., respirators, clothing, fall protection, etc.); traffic control; electrical safety including grounding and lockout/tagout; equipment safety, trenching and excavation requirements; chemical safety including air monitoring, action levels for PPE and specific corrective measures such as specific engineering controls; noise monitoring and control; confined space entry protocol; hazardous work permits; establishment of controlled areas; safe work practices, equipment and personnel decontamination; hoisting and rigging specifications; hazard communication; spill prevention and control; emergency response; hazardous weather requirements; incident investigation procedures; and medical surveillance and training protocol.
8. The SSHP shall meet or exceed any additional requirements found in the RiverRenew Construction Safety & Health Manual for Contractors.

C. All personnel employed by the Contractor or his Subcontractors, whenever entering the job site, shall be required to wear approved safety hats. The Contractor shall maintain, on site, a sufficient number of safety hats for use by visitors.

D. No employee will be allowed to work in areas where concentrations of airborne contaminants exceed federal threshold limits. Respirators shall not be substituted for environmental control measures and shall be used only as prescribed by OSHA.

E. All internal combustion equipment shall be operated in such a manner as to prevent health hazards to personnel from exhaust fumes.

F. Lighting of Work Areas: Provide adequate light in all areas where work is in progress to permit proper inspection of all operations at all times.

G. First Aid and Emergency Service:

1. General: Provide emergency first aid service.

2. Facilities: House in the Contractor's office area at each Plant and include the following minimum facilities:
    a. First aid supplies as recommended by the Contractor's Site Safety Officer.
    b. Telephone with emergency telephone numbers posted in a conspicuous place. Include the numbers of police, fire, doctor, hospital, and ambulance service.
    c. Potable Water
3. Staff and Supplies
    a. As recommended by the Contractor's Site Safety Officer.

H. Confined Space Entry: Confined space entry procedures must be followed. A Contractor issued confined space entry checklist and completed permit must be submitted to the Owner within 48 hours of completion of the entry.

I. Hazard Communications: Contractor shall be responsible for coordinating any exchange of material safety data sheets (SDS) or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with laws or regulations. All SDS sheets shall be submitted to the Owner's Director of Health and Safety for review.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. The Contractor shall submit the SSHP to the Owner for review before any work is started. Work shall not occur without resolution of the Owner's comments. the Owner's review of the Contractor's SSHP shall not relieve the Contractor of the obligations under this contract or as imposed by law. The Contractor shall be solely responsible for the adequacy of its safety and health program.

3.02 INFECTIOUS AND HAZARDOUS MATERIALS

A. Contractor is to be aware that since the project is located within a wastewater treatment facility, many forms of toxic chemicals and infectious materials (bacteria and/or virus) may be present in tanks, piping, channels, and in the atmosphere immediately surrounding such areas.

B. The Owner cannot and will not make any provisions to clean, flush, or disinfect these areas prior to or during the work.

C. Contractor shall take all precautions prior to beginning, or continuing work in any area where wastewater, sludge, grit, organic material, chemicals, chemical by-product, or any other sewage by-product may be present.

D. It shall be the Contractor's responsibility to conduct monitoring for methane, hydrogen sulfide, chlorine, oxygen deficiency/enrichment and any noxious and dangerous gases prior to and during all work whenever required for reason of safety or as directed by the Owner.

E. Whenever harmful levels of these gases are present, it will be the Contractor's responsibility to provide proper ventilation and/or special breathing apparatus, as required.

F. Contractor shall test, remove and dispose of all infectious and hazardous material in accordance with all federal, Owner, state, and local laws and regulations as required by the Contract Documents.

3.03 HEALTH AND SAFETY STANDARDS

A. The Contractor and any subcontractor shall not require anyone in their employment to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to human health or safety per the Occupation Safety and Health Administration's Occupation Safety and Health Standards (29 CFR 1910), published in the Federal Register on October 18, 1972 and Safety and Health Regulations for Construction (29 CFR 1926) published in the Federal Register on December 16, 1972, and any amendments and supplements thereto which are in effect at the time bids are opened.

B. The above referenced regulations cover minimum requirements for, but not limited to, the following:

1. Safety and accident prevention
2. Watchman
3. Sanitary facilities
4. Demolition
5. Signing and barricading
6. Site Safety

C. Failure to comply with these regulations may necessitate remedial action by the Owner to meet compliance, which shall be at the Contractor's expense.

3.04 SUPPLEMENTS

A. The supplement listed below, following "End of Section," is part of this specification.

1. AlexRenew Safety and Health Standard Operating Procedures.

END OF SECTION

CONTRACTOR SAFETY PLAN RESPONSIBILITY & REQUIREMENTS

ALEXANDRIA RENEW ENTERPRISES

Health, Safety, and Environmental Management Plan - December 2015

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1.0 CONTRACTOR HEALTH, SAFETY AND ENVIRONMENT (HSE) REQUIREMENTS

It is the policy of the Alexandria Renew Enterprises (AlexRenew) to select and contract with Contractors with the same priority and emphasis on Health, Safety and Environment (HSE) protection as we practice for our own employees. It is a contractual requirement that Contractors comply with all applicable local, State, and Federal health, safety, and environmental laws, regulations, and ordinances. AlexRenew may supplement some local, State and Federal laws, regulations and safety standards to incorporate more stringent guidelines. These will be communicated to the Construction Management Company ("CMC") so that such procedures are subsequently incorporated into the Contractors' policies and procedures while working on the Site.

This HSE Management Plan specifies requirements that may exceed local, State, and Federal laws, including OSHA standards or the Contractors' normal HSE procedures. The CMC and Contractors are responsible for reviewing and implementing the HSE requirements set forth in this Management Plan. The CMC and Contractors are also responsible for ensuring that lower tier Contractors review and implement these HSE requirements. When activities and/or the scope of work changes, Contractors shall update their HSE procedures to ensure that the additional activities are covered by their plan.

1.1 Security Requirements

The CMC and all Contractor personnel, agents, representatives, and sub-contractors, will enter the project site thru an AlexRenew established entry gates and sign in at the Security Guards office on a daily basis. Security Guard shall maintain these sign-in logs for the duration of the project and provide them to the CMC or AlexRenew when requested. Contractor visitors will be required to enter the project site thru an AlexRenew established entry gate and sign in at the Contractor's office. Visitors will be escorted at all times by an AlexRenew official, the CMC and/or a Contractor representative. If visitors tour the site, they must wear protective equipment including, but not limited to, safety shoes, hard hat, safety glasses, and high-visibility vest. The Contractor has the obligation to furnish such safety equipment for all such visitors to the Site.

This policy also applies to the visits by the general public and regulatory agency (e.g., Virginia Occupational Safety and Health Administration (VOSHA) and Department of Environmental Quality (DEQ), etc.) personnel visiting the site. Upon arrival to the site entrance, they will be asked to sign in and remain at the entry gate until CMC officials are notified and arrive to escort them around the site. The Contractor will provide the hard hat safety glasses (non-prescription), and high-visibility vest and any other safety equipment that is necessary on the Site.

Parking for all Contractor vehicles (and personal vehicles) will be parked in a designated parking area. Only construction vehicles (dump trucks, cranes, etc.) will be allowed to enter the work area. A wash bay will be available for construction vehicles to utilize prior to entering public streets.

Based on scheduled activities and Contractors on-site, a mandatory meeting will be held as required by AlexRenew and/or the CMC to discuss and coordinate security responsibilities, construction operations, working hours, number of construction personnel, and any other items of mutual interest.

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2.0 DEFINITIONS

Term	Definition
Accident/Incident	An unplanned, undesirable event that disrupts work activity.
AlexRenew	Alexandria Renew Enterprises
Safe Plan of Action (SPA)	A task-specific planning document used to help ensure that every task receives proper HSE assessment and planning. Also referred to as a Job Safety Analysis (JSA) and/or Task Hazard Analysis.
Contractor	Any party performing work, supplying materials, and/or providing services on the Site, including but not limited to: the Construction Management Company, general contractors, subcontractors, material men, suppliers, and vendors...
Construction Management Company ("CMC")	JACOBS
Site/Project Management	The highest-ranking project management official from the CMC whose regular work location/office is at the project site.
Task Safety Awareness (TSA)	A review of the SPA among the crew and supervisor to discuss and resolve any HSE issues before work is continued, such as a break in the work schedule, change in work conditions, change in crew, etc.
SSO	The Contractor Site Safety Officer.
Work	The total of the Contractor's responsibilities as set forth in the Contract Documents.
Site HSE	An AlexRenew employee responsible for the HSE program of AlexRenew.
PPE	Personal Protective Equipment such as hard hats, gloves, eye protection, and protective equipment and clothing.
Contractor Site Supervisors/ Managers	The highest ranking Contract official from any construction firm working on the AlexRenew project.
Site	The real property owned by AlexRenew where the Work subject to the Contract Documents is to be performed.

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3.0 DOCUMENTATION AND REPORTING REQUIREMENTS

3.1 A project-specific HSE Action Plan or, in the case of hazardous waste operations, a site-specific Health and Safety Plan (HASP), must be generated by each Contractor mobilizing on the project. This plan must include a project-specific Emergency Response Action Plan in accordance with AlexRenew, Local, State, and Federal requirements. All HSE Action Plans must include the name, location and direction to the hospital that is the most proximate to the Site.

3.2 If the portion of the project is regulated as a hazardous waste or emergency response operation (HAZWOPER), as defined in 29CFR 1926.65 or 29CFR 1910.120, then the Contractor must develop a HASP, utilizing someone who is qualified in the subject matter, that outlines how hazardous agents (chemical/physical/environmental) will be identified, handled, and controlled. Contractor site personnel working in this area shall be trained on the exposures, as well as the necessary precautions that are to be followed. The Contractor is required to submit

documentation of this training to the CMC prior to commencing work on the Site. In addition, any Contractor and/or Subcontractor working in adjacent non-HAZWOPER areas will be briefed on work activities and associated hazard(s) in the event of an incident or release if DRI levels exceed established "action levels." The CMC and AlexRenew officials will be immediately informed by Contractor of any hazardous situations or materials that are discovered.

3.3 Contractor shall furnish to CMC the names and qualifications of the Competent Persons and Qualified Persons, who may be required for their scope of work by Federal, State, or local regulations. Examples include, but are not limited to: Competent Persons and/or Qualified Persons for steel erection, excavation, scaffold erection, confined space entry, annual crane inspections, etc.

3.4 Contractor is responsible for maintaining a First Aid Register for all employee injuries and illnesses reported on the project. First Aid kits will be provided by all Contractors and at least two persons on Site from each company will be current and trained in First Aid and CPR.

3.5 Contractor must immediately inform CMC and AlexRenew of any inspections by VOSH, EPA, or other HSE regulatory agencies or other actions involving the Contractor's work.

3.6 Contractor must promptly report all potentially work-related incidents, injuries, or illnesses to their Supervisor or their Site Safety Officer, the CMC, and AlexRenew Safety Coordinator.

3.7 Injuries, illnesses, or any incident involving a third party or a member of the general public must be promptly reported to the Contractor Site Safety Officer, the CMC, AlexRenew Safety Coordinator.

3.9 Incidents involving potential exposure to hazardous materials and releases or spills of such materials must be promptly reported to Contractor Site Safety Officer, the CMC, AlexRenew, and the necessary Regulatory Agencies.

3.10 Accident investigation reports for all Contractor accidents, injuries, and work-related illnesses shall be forwarded to the CMC and AlexRenew Safety Coordinator within twenty-four hours of the occurrence.

3.11 Contractor employees are required to participate in documented, daily task-specific Safe Plans of Action and regular Safety Observation Reports or equivalent. Copies of these documents shall be provided to the CMC weekly.

3.12 Contractors will conduct weekly HSE meetings, and meeting reports with attendance sign-in sheets shall be maintained by the Contractor for the duration of the project and provided to CMC upon request.

4.0 HSE TRAINING/COMMUNICATION REQUIREMENTS

4.1 Contract employees must complete HSE training required by applicable Local, State, and Federal HSE requirements. All Contractor and sub-tier contractor personnel shall have current OSHA 10hr Construction training at a minimum in addition to any other training required by governing agencies for the scope of work to be performed. Documentation of all HSE training shall be maintained at the project site by the Contractor and provided to the CMC upon request.

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4.2 Workers involved with hazardous waste operations, as defined by 29 CFR 1910.120 or equivalent applicable local, State and federal regulations, shall have met, prior to any field work activity or exposure, the training requirements of the standard to include OSHA 40-Hour HAZWOPER Training. Certification of individual worker training shall be provided to the CMC prior to commencing work.

4.3 Contractors must certify that all operators of mobile equipment such as forklifts, cranes, boom lifts, etc. as required by applicable local, state, and federal regulations, have been trained and/or certified on the proper operation of the equipment. Crane operators shall have a current NCCCO certification. Copies of this training and certification shall be maintained on the project site by the Contractor and provided to CMC upon request. Mobile crane operators must be qualified on each specific crane (type & rating) that they are assigned to operate through an OSHA and/or industry recognized testing and qualification procedure. Backup alarms will be functional and tested on a daily basis.

Contractors must establish a prompt and effective method of providing HSE communications such as HSE alerts, advisories, bulletins, regulatory updates, etc., to all Site employees.

5.0 BASIC HSE REQUIREMENTS

The following paragraphs list HSE rules and fundamental requirements for Contractor HSE. When there are multiple rules that may apply, the most stringent of AlexRenew, CMC, Local, State, and/or Federal HSE regulations that govern the work shall be followed.

5.1 Each Contractor shall appoint an on-site Site Safety Officer, who will attend regular CMC HSE meetings and be responsible for implementation of the rules listed below, as well as other HSE rules determined to be necessary for the safe execution of the project. The Contractor Site Safety Officer must possess current 30 hour construction OSHA card.

5.2 Hard hats (ANSI Z89.1 or equivalent) shall be worn at all times (e.g. construction, environmental operations, operations or maintenance environment), regardless of the workers' activities. This includes welders using welding hoods. Hard hats shall be worn in the forward position only.

5.3 Shirts with at least four-inch sleeves and full length pants shall be worn at all times. No tank tops are allowed. Loose or frayed clothing, lose or hanging long hair, ties, rings, body jewelry, etc. shall not be worn around moving machinery or other areas where they may become tangled.

5.4 Hearing protection shall be worn when exposures exceed 85 DBA and/or during work with heavy equipment. Sound level determination is the responsibility of the contractor and/or their lower tier sub-contractors.

5.5 Hard-toe footwear (ANSI Z41.1, or equivalent) shall be worn at all times by all workers when in the construction environment or in areas where there is a danger of foot injuries due to falling, rolling, or piercing objects or when an employee's feet are exposed to electrical hazards.

5.6 Safety glasses with rigid side shields (ANSI Z87.1, or equivalent) shall be worn at all times when in the construction environment and in any area where eye hazards exist. This includes under welding hoods and for workers with prescription eye wear. Safety goggles may be worn over non-safety prescription eyewear.

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5.7 Face shields must be worn in addition to safety glasses when grinding, chipping, jack hammering, and power sawing or when conducting other tasks that involve such face and/or eye hazards.

5.8 Gloves, appropriate for the hazard present, shall be worn when hands are exposed to absorption of harmful substances, cuts, abrasions, punctures, biological hazards, chemical burns, thermal burns, or harmful temperature extremes.

5.9 Contractor shall comply with AlexRenew's six (6) foot (construction) four (4) foot general industry fall protection requirement. The Contractor is responsible for implementing their own systems to comply with this requirement and other pertinent requirements specified in the VOSH/OSHA standards.

5.10 The use of "passive" systems, such as safety nets, monitoring systems, or controlled access zones, as the sole means of fall protection when working above six feet, is prohibited.

5.11 Each Contractor who is exposed to a fall hazard shall submit a rescue plan as required by OSHA.

5.12 Workers in mechanical lifts, including scissor lifts, boom trucks, suspended or supported personnel baskets, articulating lifts, and other similar devices must use fall protection equipment at all times. Only anchorage points designated by the manufacturer are permitted to be used. Such devices shall not be used as elevators to transport workers to different work locations. All workers operating such lifts shall be trained on the use of the lift and the documentation of this training shall be available upon request by CMC.

5.13 All portable ladders must be clearly marked with the ladder owner's name. Ladders shall be inspected by a competent person before use. All damaged ladders shall be removed immediately from the Site.

5.14 The safest means of worker access for overhead work (e.g., rolling scaffolds, mechanical lifts, platform ladders, etc.) shall be considered as alternatives to the use of portable ladders. If ladders are used, then the top of all straight and extension ladders shall be tied to a substantial anchor point before use; a second worker must hold the ladder until the tie-off is secure. If a worker's feet are on or above the fifth rung of a stepladder, the top of the ladder must be tied to a substantial anchor or a second worker must hold the ladder throughout the task.

5.15 When ascending or descending a portable ladder, three-point contact shall be maintained at all times. When potential fall exposure exceeds 20 feet, personnel on ladders must be protected with a personal fall arrest system.

5.16 Decking sections shall be laid tightly and immediately secured upon placement to prevent accidental movement. During initial placement, decking sections shall be placed in such a manner to ensure full support by structural members and each piece shall be individually secured. Pre-installation or shake-out of multiple sections of decking using temporary methods of attachment, such as tack welding, is not allowed. The use of controlled decking zones is not allowed.

5.17 Work above or adjacent to water requires a specific written safe work plan, which must be submitted to CMC and or AlexRenew for review before work begins. This includes, but is not limited to, rivers, lakes, canals, settlement ponds, and open tanks containing liquids. United States Coast

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Guard-approved Personal Flotation Devices (PFDs) must be worn when working above or adjacent to water. When working above water or adjacent to water without 100% fall protection, PFDs that will provide floatation to an unconscious user in a face-up position must be used. Personnel shall not work alone above water.

5.18 Equipment and tools shall not be altered in any way to adapt it for a job for which the manufacturer does not intend it. The manufacturer of the equipment must approve any such adaptations or alterations to equipment in writing. Only trained and authorized persons shall operate machinery or equipment.

5.19 All hand-held power tools must be equipped with constant pressure switches that will automatically shut off power when the pressure (worker's hand) is removed. Hand-held power tools with on/off or lock-on switches are not allowed.

5.20 Ground Fault Circuit Interrupters shall be used to protect all temporary electrical wiring and cord sets. The use of an assured grounding conductor program in lieu of GFCIs is not an option.

5.21 Contractor will be provided with a copy of AlexRenew Lock-Out/Tag Out program and procedures through CMC or AlexRenew. Contractor will provide AlexRenew with a copy of their Lock-Out/Tag Out program and procedures through CMC or directly to AlexRenew. This exchange of programs is for informational purposes only. Contractor's lock-out/tag-out procedures shall meet or exceed AlexRenew's program and be followed to minimize the potential exposure of workers to hazardous energy. This exchange is for informational purposes only. Hazardous pipelines or vessels will be isolated by using a double block and bleed system or by blanking. Every effort must be made to de-energize electrical equipment to be worked on and other electrical equipment in the area that may affect the work. If the equipment cannot be isolated or de-energized, a specific written safe work plan must be submitted to CMC and AlexRenew Safety Coordinator for review before work proceeds. Only "Qualified Electricians" may work on energized or potentially energized circuits. See 29 CFR 1910.332 for qualified electrician requirements. AlexRenew considers equipment rated at 50 volts and above as "high voltage."

5.22 In addition to NEC, and OSHA 1910/1926 Electrical requirements, the Contractor shall comply with the provisions of NFPA 70E, "Standard for Electrical Safety in the Workplace." Contractors shall ensure that their employees are trained in safe work practices, qualified, and provided equipment, tools, and personal protective equipment (PPE) that are specified in NFPA 70E.

5.23 Per 29 CFR 1910.146, confined space entry work must follow a documented hazard assessment and safe work planning process, which must be submitted to the CMC for review prior to entry.

- Contractor who plans to enter a confined space shall submit a written plan to CMC that complies with the above referenced OSHA standard prior to the entry taking place.
- As part of project planning activities, all on-site confined spaces that may be entered shall be identified, evaluated, and classified (permit-required vs. non-permit-required). Likewise, confined spaces discovered during work activities, and which will require entry, will also be evaluated and classified.
- All permit-required confined spaces will be labeled so that employees are adequately warned of the potential for hazardous atmospheres. Labeling is not required under the following circumstances:
- The spaces are easily recognizable, numerous, and widely spaced (e.g., storm sewer manholes).

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- Employees will be instructed that these constitute confined spaces during required training. However, these locations will be included on the inventory.
- A complete inventory has been developed, all personnel have been trained in the use of the inventory, and the workers consult the inventory prior to performance of any work that may require entry into a confined space.
- When non-permit-required confined spaces require the implementation of confined space entry procedures because of specific work operations (e.g., painting, welding), all entry points will be labeled so as to alert all employees of the existence of the hazardous conditions. These signs will be removed only when the hazard no longer exists (e.g., complete curing of the paint).
- Non-permit-required confined spaces can be designated by only a Certified Industrial Hygienist, Certified Safety Professional, Professional Engineer, or a competent person with appropriate confined space training and experience after review of the space(s), historical monitoring data, and other factors (e.g., injuries that have occurred). Therefore, all confined spaces will be considered permit-required, unless the Contractor submits, in writing, an explanation of their justification to re-classify the space. AlexRenew and/or the CMC have the right to refuse the re-classification.

5.24 High-visibility reflective safety vests (ANSI/ISEA 107, Class II, or equivalent) must be worn by all personnel.

5.25 Motor vehicles and mobile equipment shall never be left running without an operator at the controls. Proper use of seatbelts by all occupants is mandatory. Motor vehicle operators are prohibited from using a mobile phone or two-way radio. This applies to both hands-free and non-hands-free devices. If the use of such a device by the motor vehicle operator is necessary, it is only allowed when the motor vehicle is stationary and in a safe location off the roadway. Contractor shall make all efforts to avoid any petroleum spills and leaks from any motor vehicle and equipment.

5.26 Examples of critical lifts include, but are not limited to: lifts of more than 50 tons, those which exceed 85% of the crane's capacity, involve more than one crane, and lifts of a non-rigid object or over active work areas or public property. All "critical lifts" require written prior notification to CMC before proceeding. A lift plan will be required to be submitted by the Contractor two weeks prior to the lift taking place.

5.27 All outriggers on mobile cranes must be fully extended and fully deployed when the crane is used to lift or support a load. All lifts shall be conducted per the manufacturer's requirements and/or recommendations and per the applicable load chart.

5.28 Anti two-block devices that automatically disengage crane hoist/boom functions when the hook or block approaches the jib or boom tip are required on all cranes.

5.29 Multiple lift rigging (Christmas tree lifts) is not allowed without prior written notification to Site/Project Management and development by the Contractor of a written site-specific plan to prevent exposure to overhead loads.

5.30 Field supervisors for the Contractor are responsible for protecting their workers from heat and cold stress conditions by incorporating protective measures, PPE, and adequate fluid and food intake.

5.31 Eating and drinking will be permitted only in designated areas at AlexRenew project sites. Smoking

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will be permitted only in areas designated by Field Supervisors and situated in locations that are not in the immediate vicinity of activities associated with work site activities. Additionally, Field Supervision will designate each smoking area giving primary consideration to those personnel who do not smoke.

- Personnel actively involved in the performance of certain activities will not be permitted to smoke, eat, drink, or use smokeless tobacco, except during breaks (e.g. HAZWOPER Controlled work areas).
- Site personnel will first wash hands and face after completing work activities and prior to eating or drinking.

5.32 Adequate illumination will be provided by Contractors at all times.

6.0 CERTIFICATION, INSPECTIONS, AND REGULATORY AGENCY PERMITS

6.1 Certain operations may require prior written notification to the Site/Project Management and CMC. Such activities may include but are not limited to hot work, confined space/vessel entry, excavations, asbestos abatement, lead abatement, etc. Contractor shall confer with CMC whether any parts of the Contractor's activities require prior written notifications.

6.2 Contractors are responsible for securing and complying with all city, state, and federal permits.

6.3 A third-party certified Qualified Person shall make a thorough annual inspection of all cranes and powered hoisting equipment. Cranes assembled on site shall receive an annual inspection prior to being put into service. Documentation of all crane inspections shall be maintained on site by the Contractor and provided to Site/Project Management upon request.

6.4 All scaffolding must be inspected and tagged by a Competent Person prior to initial use, before each work shift, and after any event that could affect its structural integrity. Suspended scaffolds must receive documented daily pre-use inspections. Untagged scaffolds must not be used.

6.5 Mobile equipment must receive daily pre-use inspections, which will be documented by Contractor and given to CMC upon request. Examples include forklifts, backhoes, personnel lifts/man lifts, etc.

7.0 SITE OPERATIONS

Contractors shall include planning for environmental compliance in the preparation of their HASP or HSE Action Plan. Issues to be considered include but are not limited to release reporting, air permits, water permits, asbestos/lead permits or notifications, hazardous waste generation and related disposal procedures, spill mitigation, clean-up methods, etc.

Contractor shall have a written Hazard Communication Program and comply with the requirements of 29 CFR 1910.1200. A copy of the program shall be forwarded to Site/Project Management and a copy shall be in the possession of the Contractor onsite.

Any potentially hazardous material or chemical brought onto the site shall be accompanied by a Material Safety Data Sheet (MSDS). Copies of MSDSs shall be forwarded to the Site/Project Management before the product is brought onto the site.

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Small quantities (less than 10 gallons) of hazardous liquids, such as gasoline, diesel fuels, and solvents, brought onto the site shall be stored in a properly labeled safety container with a flame arrestor and self-closing lid. Larger quantities will require the construction of a berm to contain a release.

Site/Project Management shall be notified before any chemical or material is used that could create foul smelling, noxious, or toxic vapors or gasses.

All accidents involving exposure to potentially hazardous materials and hazardous material releases (as defined by EPA-RCRA) must be immediately reported to Site/Project Management. It is important to report all releases or exposures even if the incident is considered minor or adverse health effects or symptoms are not apparent at the time.

7.1 Clearing and Grubbing: Chain saws should be used with caution in order to prevent personal injury, as the cutting mechanism is unguarded. Kickback is the single biggest cause of the chain saw injuries. A kickback is the sudden and potentially violent rearward and/or upward movement of the chain saw.

Prior to making the cut, all other workers must be removed and made aware of the fall area.

The operator must be completely familiar with the controls and proper use of the equipment.

- Minimum PPE required includes hardhat, hard-toe safety boots, safety glasses, hearing protection, leather gloves, and debris shield.
- Chainsaw operations require the use of chainsaw chaps (leather leggings are not suitable)
- Employees working aloft in trees will use proper climbing, fall protection, and descending equipment. Fall protection procedures shall be implemented.
- A high visibility reflectorized safety vest will be worn when working around vehicular traffic.

Covering of Holes: Contractors are also responsible for insuring that holes at are two (2) inches or greater in floors, roofs, and other walking/working surfaces are covered. The following is a list of requirements for covering holes:

- Covers for holes shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.
- All covers shall be secured when installed to prevent accidental displacement by wind, equipment, or employees.
- Covers shall be marked with the word "Hole" or "Cover" to provide additional warning of the hazard.
- Caution or Danger tape around or over holes four (4) feet or more are not to be used at AlexRenew as protective devices. Tape does not provide any fall protection.

Fire Prevention:

- Fuel should be stored in approved metal safety cans only and labeled as to contents.
- The container should have a metal spout and funnel provided, to allow for electrical bonding during fuel transfer.

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- Equipment will be turned off while being refueled.
- Smoking is prohibited during refueling.
- After completing fueling, carefully wipe off any gasoline spilled before starting the engine
- Keep a fire extinguisher available at all times in the work area.
- Keep the equipment clean of gasoline, oil, and sawdust.

Wood Chipping Hazards: Wood chipping equipment should be used with extreme caution in order to prevent personal injury, as the chipping mechanism is open to receive tree branches and other wooden material. The cutting blades begin to rotate when the engine starts and slows down gradually after the engine is shut off.

In addition, the following work safety practices should be observed:

- Care should be taken to avoid foreign objects such as metal, glass or rocks that could damage equipment and become projectiles.
- Personnel will not wear loose clothing, gauntlet gloves, or hand/wrist jewelry when operating a chipper.
- No part of an employee's body will be placed on the chipper table, nor the discharge chute rose while the rotor is turning.
- A chipper will be fed from the side of the centerline, and the employee will immediately turn away when the brush is taken into the rotor chamber.
- Bystanders should be kept at least 25 feet away when in operation.
- Never try to clear blockages by hand and always engage the chipping mechanism gradually using the safety handle.
- Brush chippers will be provided with a locking device on the ignition system that prevents startup when the key is removed.
- Access panels must be closed and secured before chippers are used.
- The infeed hopper or table will be of a design to prevent an employee from reaching the rotor blades or knives during normal operation.
- Trailer-type chippers will be chocked.
- The feed-openings will be protected with flap-type guards to prevent kickback of chips.

7.2 Landfill Operations**:**

- All ground personnel must wear a high-visibility, reflective safety vest at all times. Safety vests must be visible from all angles.
- All ground personnel will yield to heavy equipment and maintain approximately 100 feet of clearance at all times while maintaining constant eye contact with the operator.
- The site supervisor must notify Site/Project management prior to allowing any worker to enter a high-traffic area. The site supervisor shall instruct Site/Project management to alert all operators when personnel will be entering traffic areas to perform assigned work. When feasible, perform work during periods of low traffic. All work performed in high traffic areas shall be performed within physical barriers, such as cones, warning tape, concrete jersey barriers, etc. Physical barriers will be set up in such a manner to be visible to all operators.
- Operators and site supervisors shall ensure all reverse warning devices are in working order prior to the operation of equipment. If any person notices an inoperable reverse warning device, that person shall immediately notify the operator and the site supervisor. Any vehicle with an

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inoperable reverse warning device shall be tagged and placed out of service until equipped with a working device.

7.3 Drilling:

- Use common sense while maintaining a "safety-first" attitude at all times.
- Know the location of underground and overhead utilities
- Use required PPE; do not wear loose-fitting clothing or jewelry. Keep hair tied back and tucked into hardhat.
- Do not touch or go near moving parts.
- Be aware of the location of "Emergency Shut Off" switches.
- Be aware of potential contaminants. Always wear required PPE and follow appropriate decontamination procedures.
- In the event of an accident, allow properly equipped and protected personnel to respond. Immediately leave the area.
- Do not smoke or use spark-producing equipment around drilling operations.
- No food will be consumed or stored in the work area.
- Do not work around a drill rig during a thunderstorm or rain.
- Maintain orderly housekeeping on and around the drill rig. Store tools, materials, and supplies to allow safe handling by drill crewmembers. Proper storage on racks or sills will prevent spreading, rolling, or sliding. Avoid storage or transportation of tools, materials, or supplies within or on the drill rig derrick.
- Maintain working surfaces free of obstructions or potentially hazardous substances.
- Store gasoline only in containers specifically designed or approved for such use.
- Fire-fighting equipment should not be tampered with and should not be removed for other than the intended fire-fighting purposes or for servicing.
- The departing driller should inform the oncoming driller of any special hazards or ongoing work that may affect the safety of the crew.
- Rigging material equipment for material handling should be checked prior to use on each shift and as often as necessary to ensure it is safe. Defective rigging should be removed from service.
- Work areas and walkways should not be obstructed. The area around the derrick ladder should be kept clear to avoid unimpeded access to the ladder. The rotary table of the rig floor shall be kept free of obstructions and free of undue accumulation of oil, water, ice, or circulating fluids.
- Passengers shall only be allowed in vehicles designed for passenger use. Do not ride on the outside of drill rigs, trailers, or other equipment.

Utility Clearance: Contractors will determine the location of all underground/overhead utilities before drilling operations take place. Project management shall contact Miss Utility to obtain written clearance. For areas that are not covered by Miss Utility or local utility companies, (i.e., client specific utilities), clearance must be obtained from AlexRenew. In addition to obtaining utility clearances, the appropriate party will make a utility survey of each drilling point. The utility survey shall include, but is not limited to; both magnetometer and ground-penetrating radar survey. Documentation that nearby utilities have been marked on the ground and that the drill site has been cleared shall be kept in the project trailer/support vehicle and communicated to the drilling Contractor. All utilities shall be identified on a job hazard analysis and communicated to all drilling and drill support personnel.

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Prior to the start of site work each day, the drilling Contractor will inspect all drilling equipment. The inspections will be documented in the field records, and the records will be maintained at the site. The drilling equipment inspection must be repeated on a daily basis. Defective equipment shall be repaired prior to use.

The following are minimum specifications for performing maintenance on drilling equipment:

- Safety glasses shall be work, at a minimum, when performing maintenance on a drill rig or on the drilling tools.
- Follow all manufacturers' recommendations for maintenance on drilling equipment.
- The drill rig engine shall be shut down before making repairs or adjustments to a drill rig or lubricating fittings (except repairs or adjustments that can only be made with the engine running). The operator shall remove keys and tag out the ignition. All systems (i.e., drill rotor, engine, pressurized lines, etc.) shall be at a "zero energy state" before performing maintenance.
- The leveling jacks shall be lowered, the wheels chocked, and the hand/parking brakes set before working under a drill rig.

Moving Drill Equipment:

- Lower drilling mast before moving rig.
- Secure all loads to rig prior to off-road mobilization.
- Inspect the route of travel prior to moving the drill rig off-road. Be aware of holes, rocks, trees, erosion, and uneven surfaces.
- Remove all passengers from the cab before moving drill rig onto rough or sloped terrain
- Engage multiple drive power trains (when available) on rig vehicle when mobilizing off-road.
- Travel directly up or down grade on slopes when feasible. Avoid off-camber traverse approaches to drill sites.
- Approach changes in grade squarely to avoid shifting loads or unexpected unweighting.
- Use a spotter (person at grade) to provide guidance when vertical and lateral clearance is questionable.
- Use parking brake and chock wheels when grades are steep.

Raising the Derrick (Mast):

- Locate overhead utilities visually prior to raising the mast
- Treat overhead electrical lines as if they were energized and maintain at least a 40-foot clearance.
- Contractors will contact appropriate utilities agency to manipulate and deactivate overhead service in areas that interfere with drilling operations. Do not attempt to handle utilities.
- Stabilize and level each work site prior to drill rig setup. Do not drill on slopes near power lines, including drainage ditches, trenches, excavations, and other holes.
- The derrick must not be raised until the rig has been blocked, leveled (leveling jacks down), and chocked.
- Secure and lock mast according to manufacturer's recommendations prior to drilling.
- If required to perform work on the mast at heights above six feet, a full body safety harness and lanyard shall be work accordingly.
- Note wind speed and direction to prevent overhead utility lines from contacting rig derrick. Allow at least a 40-foot clearance between rig mast and utility lines, unless authorized by the CMC Site

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HSE Representative to operate at a shorter clearance distance.

Drilling:

- Follow the manufacturer's operational or field manual's safety guidelines/specifications.
- Only authorized and trained drill rig operators shall operate a drill rig. Drill rigs shall be setup and operated according to manufacturer's specifications.
- Set up and delineate appropriate work zones. This may include an exclusion zone, contamination-reduction zone, and a support zone. When feasible, work zones shall be cleared of obstructions and leveled to provide a safe working area.
- Establish a communication system between driller, helpers, and other field support personnel for responsibilities during drilling operations.
- All personnel shall be instructed to "stand clear" prior to and during startup. Personnel shall stay as far away as possible from operating equipment; especially if a rig is located on unstable terrain (drilling operations shall not proceed on unstable ground).
- Begin auger borings slowly with the drive engine operating at low speed.
- Keep hands and feet clear of rotating augers and direct push equipment.
- Prevent placing hands or feet under auger sections during hoisting over hard surfaces.
- Avoid the removal of spoil cuttings with hands or feet.
- Assure drill rig is in neutral and the augers are not rotating before cleaning augers.
- Wear hearing protection as required.

Fall protection must be maintained around the hole at all times. At no time shall a worker go inside the rails, especially when the equipment is present. Each hole shall be sufficiently protected when work is not taking place.

7.4 Excavation and Trenching:

The following factors are to be evaluated by a competent person and discussed before commencing excavation operations:

- Soil Structure: Excavations in wet soil, sandy soil, or areas that have been backfilled are relatively unstable and must be supported or sloped if employees are to enter the excavation.
- Weather Conditions: Changing weather conditions greatly affect the safety of working in and around excavations. Excess water from rain or snow loosens the soil, increasing the chance of the soil caving in. Excavation should be diked, pumped, or covered, to prevent an excessive amount of water from accumulating.
- Superimposed Loads: Superimposed loads in the vicinity of excavation walls increase the probability of a cave-in. Heavy equipment and materials should be kept back as far as possible. Heavy equipment should be placed on wooden mats or planking to spread the weight more evenly. Considerations must also be taken when buildings, curbs, trees, utility poles, and other structures are around the excavation. Excavated soil must be stored away from the edge of the excavation.

The following safe operating guidelines will apply to excavations exceeding 4 feet in depth.

- Prior to opening an excavation, all efforts shall be made to locate and mark all underground

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utilities. Miss Utility shall be contacted prior to any digging.

- Trees, boulders, and other surface encumbrances that create a hazard will be removed or made safe before excavation is begun.
- Excavated materials will be stored and retained at least 3 feet from the edge of the excavation. Walkways and sidewalks shall be kept clear of excavated materials.
- Special precautions shall be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation.
- If the excavation may affect the stability/integrity of an adjacent structure, it must be assessed by a qualified person prior to the work taking place.
- Diversion ditches, dikes, or other suitable means will be used to prevent water from entering an excavation and for drainage of the excavation.
- When mobile equipment is used or allowed adjacent to excavations, stop logs or barricades will be installed. The grade will always be away from the excavation.
- Dust conditions during excavation will be kept to a minimum. Wetting agents shall be used upon the direction of the CMC.
- Employees subjected to vehicle traffic in excavating operations shall don reflective clothing. Excavations shall be inspected by a competent person prior to employees entering the space.
- When employees are required to work in an excavation 4 feet or deeper, one or more ladders shall be provided for access/egress. Within the trench, the maximum horizontal travel distance to a ladder shall be no more than 25 feet. The ladder shall extend a minimum of 3 feet above the excavation and be secured. This ladder shall not be removed until all employees have exited the excavation. All ladders will meet the requirements of 29 CFR 1926 Subpart X.
- Excavations equal to or deeper than 5 feet which are entered by employees shall be sloped, shored, or supported by some other protective system prior to entering the space.
- Guardrail or fences shall be placed at all excavations which are close to sidewalks, drives, or other thoroughfares. Adequate protection shall also exist at remote excavations where workers are not present.

Protective Systems: OSHA requires that a competent person inspects all excavations prior to employees entering them. If the competent person determines that a hazard or cave-in exists below 5 feet in depth, that competent person shall determine the necessary precautions to take. Once an excavation reaches 5 feet or more which will be entered by employees it shall be protected by at least one of the following options;

- Sloping or benching in accordance with the following diagram:

Maximum Allowable Slopes

	Horizontal to Vertical Ratio (Slope)	Degrees
Stable Rock	Vertical	90
Type A	¾: 1	53
Type B	1:01	45
Type C	1 ½: 1	34

Notes:
No soil classification is required if a 1 ½:1 slope (34-degree slope) is used. If a 1 ½:1 slope is not used, a soil classification must be made by a competent person. The excavation must then comply with the above minimum slope requirements.

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- The second method of support is shoring, sheeting, tightly placed timber shores, bracing, trench jacks, piles, or other materials installed in a manner strong enough to resist the pressures surrounding the excavations.
- The third method is to use a trench box, which is a prefabricated movable trench shield made of steel plates, welded to a steel frame.
- The forth option is to follow a Registered Professional Engineer's design.

Hazardous Atmospheres: When Contractors perform excavation operations in areas where a hazardous atmosphere could reasonably exist (e.g., landfill, hazardous storage areas, underground/aboveground storage tanks, etc.) personnel will, at a minimum, apply these guidelines:

- Perform atmospheric testing in the anticipated breathing zone of the work area to determine oxygen content, combustible gas, and toxic gases and vapors, at a minimum, if applicable
- Employees will not perform work in areas with less than 19.5% oxygen without the appropriate respiratory protection or adequate ventilation.
- Employees will not perform work in an area with greater than a 10% lower explosive limit (LEL) level.
- Toxic gases will be evaluated on a per-site basis using direct-reading instrumentation (DRI).

Competent Person: The SSO or designated alternate will serve as the site's "competent person" for excavation operations. The designated competent person must meet the following qualifications:

- Has sufficient experience to identify existing and predictable hazards in the excavation surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees, and has the authority to take corrective actions.
- Is a registered Professional Engineer (P.E.) in civil engineering, or
- Has completed a competent person training course in excavation safety which includes at a minimum, the following elements:
  - Soils classification and identification
  - Appropriate sloping/shoring methods
  - Shoring system types and construction
  - Operational safety practices
  - Inspection of excavations

The designated competent person will be responsible for:

- Performing a daily inspection of the excavation (to be documented on an *Excavation Daily Inspection Checklist* form)
- Overseeing excavation operations to ensure that they conform to the requirements of 29 CFR Subpart P.

7.5 Overhead Electrical Lines**:**

Operation of heavy equipment and cranes in areas with overhead power lines represents a significant hazard to all personnel on the job site. Accidental contact with an energized lines or arcing between a high power line and grounded equipment can cause electrocution of equipment operators or nearby ground personnel, and damage to power transmission and operating equipment. While maintaining a safe distance from all energized lines is the preferred means for control of this hazard, site conditions may

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not always accommodate this. If work will (or may) occur within 50 feet of any energized lines, the procedures outlined below will be observed.

- Overhead power lines will be identified on each job site before the work commences. For each identified line, the Project Manager must determine whether it is energized (and the operating voltage for energized lines), and whether work operations will require that activities with heavy equipment (excavators, loaders, cranes, etc.) will occur within 50 feet of the line. Unless verified, it will be assumed that all lines will be energized.

Hazard Prevention: Safe working distance is the minimum distance which must be maintained between any energized electrical line and any part of the operating equipment to maintain adequate safety margins, and is based on the line voltage of the power line. The following safe working distance criteria will be applied for all Operations:

0-50	10 feet
>50 – 200	15 feet
>200 – 350	20 feet
>350 – 500	25 feet
>500 – 750	35 feet
>750 – 1000	45 feet

Notes:
Source – American National Standards Institute, Publication B30.5

Where any work task will not allow the minimum safe working distance to be maintained at all times, an alternate means of protection must be identified and approved by the CMC. In order of preference, acceptable procedures are:

- De-energize the power line(s)
- Relocate the lines
- Install insulated sleeves on power lines
- Assign line spotters to assist the equipment operator (this method should only be used in conjunction with one of the methods above to increase safety. It is not allowed to be used in lieu of other means).

Elimination of electrical power provides the most acceptable means of ensuring safety of personnel. While temporary site power lines are under the control of the site manager; (and can be de-energized locally) electrical distribution and transmission lines can be de-energized only by the owner of the line, (generally the local electrical utility). Therefore, de-energizing of a line requires the advance coordination with the line owner – generally at least one week advance notice should be provided.

Insulating sleeves can be placed over power lines to provide a contact and arcing barrier if work must occur closer to the power lines than the accepted safe work distance. Although not as desirable as line de-energizing, the use of these sleeves can provide an acceptable alternative where electrical lines are required to remain in service.

As with de-energizing of distribution and transmission lines, placement of insulating sleeves can be performed only be the line owner. This requires advance coordination with the line owner. To install the

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sleeves, representatives of the line owner will require access to the job site.

A line spotter is a person located at ground level who is assigned to observe equipment operations with the specific duty of assisting the equipment operator to ensure that no part of the equipment gets too close to an energized, unprotected electrical line. This method alone cannot be used if the required distances cannot be maintained.

Persons assigned to act as line spotters must meet the following requirements:

- While acting as a spotter, no other duties may be performed (e.g., the line spotter cannot also act as the load spotter during a lifting operation)
- The spotter will have a radio or other direct means of communicating with the equipment operator at all times.
- The spotter will be positioned at a right angle to the equipment operator's line of sight to maximize the sight angles between the personnel.

Under no circumstances will any portion of a piece of equipment pass closer than the required minimum distance to an energized, un-insulated electrical line.

The following additional safety measures can be implemented as needed when working around energized power lines:

- Provide equipment with proximity warning devices – these provide an audible alarm if any part of the equipment gets too close to a line.
- Install ground safety stops – these prevent vehicles from accidentally entering hazardous areas.
- Equip cranes with a boom-cage guard – this prevents the boom from becoming energized if an electrical line is contacted.
- Utilize insulated links and polypropylene tag lines – these prevent transmission of electricity to loads or tag line handlers if an electrical line is contacted.

  NOTE: These additional safeguards are intended as supplemental protection. Use of these measures is not permissible as a substitute for maintaining the safe working distance or implementation of the safety procedures.

7.6 Welding, Cutting, and Other Hot Work**:**

- AlexRenew must be notified of any cutting or welding activities within any structure including Access Galleries (Tunnels) on the plant prior to the work being started. This notification is to allow AlexRenew to contact their Fire Alarm monitoring company and the City Fire Department to have them disregard fire alarms triggered by the heat or smoke of the welding operations.
- Equipment will be used only for operations for which it is approved, and as recommended by the manufacturer.
- Workers assigned to operate or maintain oxygen/fuel-gas supply equipment and resistance welding equipment will be thoroughly instructed in the safe use of such equipment by a qualified person.
- Engineering controls will be implemented to control hot work hazards to the extent feasible.
- Before cutting or welding is performed, the area will be inspected by the supervisor responsible

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for authorizing hot work. When appropriate, a written Hot Work Permit will also be completed to designate specific approvals needed and precautions to be taken.

- Hot Work Permitting procedures will be followed whenever Hot Work is to be performed in or within 100 feet of any Class I Div. I area. This includes but is not limited to Hot Work in:
  - Building A
  - Building C
  - Building K
  - Building L
  - Building M
  - Building 20
  - Building 55

Storage and Handling of Compressed Gas Cylinders:

- Compressed gas cylinders will be legibly marked with either the chemical or trade name of the gas. Such markings will be stenciled, stamped, or labeled and will not be easily removable.
- The marking will be located on the shoulder of the cylinder.
- Compressed gas cylinders will be equipped with approved connections.
- Acetylene cylinders will be stored and used valve end up.
- Cylinders will not be stored near highly combustible/flammable materials, especially oil or grease.
- Cylinders will be stored in an upright and secure position with caps installed and separated from fuel-gas cylinders or combustible materials (especially oil or grease), by a minimum distance of 20 feet, or by a noncombustible barrier of at least 5 feet high and having a fire resistance rating of at least one half hour.
- Cylinders will not be dropped, struck by objects, or permitted to strike each other violently.
- Cylinder valves will be closed and gauges removed before moving cylinders.
- Cylinder valves will be closed and gauges removed at the end of the shift or when work is finished.
- Valves of empty cylinders will be closed.
- Cylinders will be kept far enough away from the actual welding/cutting operation so that sparks, hot slag, or flames will not reach them.
- Cylinder valves will always be opened slowly.
- An acetylene cylinder valve will not be opened more than one and one-half turns of the valve stem and preferable no more than three-fourths of a turn.
- Where a special wrench is required to operate a cylinder valve, it will be left in position on the stem of the valve when the cylinder is in use. In the case of manifold or coupled cylinders, at least one such wrench will be available for immediate use.
- Regulators will be removed, valve caps in place, and valves closed when cylinders are transported by vehicles. All vehicles used to transport cylinders will have a proper support rack installed.
- A suitable cylinder truck, chain, or other steadying device will be used to prevent cylinders from being knocked over while in use or storage.
- Cylinders will not be placed where they may become part of an electrical circuit.
- Tapping of an electrode against a cylinder to strike an arc will be prohibited.

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Eye and Face Protection Eye and face protection will comply with the following:

- 29 CFR 1926.102
- Welding helmets and hand shields will be used during all arc welding/cutting operations, excluding submerged arc welding. Cutting/welding goggles will also be worn during arc welding/cutting operations. The goggles or glasses may be either clear or colored glass, depending on the type of exposure in welding operations. Helpers or attendants will wear proper eye protection.
- Safety goggles or other approved eye/face protection are for use during gas welding operations in light work, torch brazing, or inspection.
- All operators and attendance on resistance welding or brazing equipment will use face shields or goggles, depending on the particular job.

Protective Clothing Hot work will require the following protective clothing:

- Except when engaged in light work, all welders will wear flameproof gauntlet gloves.
- Flameproof aprons made of leather, or other suitable material, may also be desirable for protection against radiated heat and sparks.
- Woolen clothing will be worn in preference to cotton because it is not so readily ignited. Nylon clothing is not permitted for welding/cutting operations. All outer clothing, such as jumpers or overalls, will be reasonable free from oil or grease.

Fire Watch:

- When required, a fire watch will be maintained for at least 30 minutes after completion of welding/cutting operations so that possible smoldering fire can be detected and extinguished. This includes breaks and lunches. Firewatchers will have fire-extinguishing equipment readily available and be trained in its use.
- Firewatchers will be familiar with facilities and procedures in the event of a fire. They will watch for fires in all exposed areas and attempt to extinguish them only when obviously within the capacity of the equipment available. The City Fire Department will be immediately notified of all fires.

7.7 Heavy Equipment**:**

Field operators that involve heavy equipment represent a significant hazard to ground workers as well as heavy equipment operators. Heavy equipment may cause serious injury or death as a result of a rollover, contact with ground personnel, and pinch points. All personnel working at or visiting a site where heavy equipment operations occur shall read and abide by the requirements of this procedure.

Communications between site supervisors/managers, heavy equipment operators, and other site personnel is a key method of preventing serious injury or death during heavy equipment operations. The following outline the communication requirements during heavy equipment operations:

- Contractor Site supervisors/managers shall ensure that all operators are notified/informed of when, where, and how many ground personnel will be working on the site.
- Contractor Site supervisors/managers shall inform ground personnel before changes are made in the locations of designated areas.

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- If required to work near heavy equipment, ground personnel shall use industry standard hand signals to communicate with operators.
- Always maintain eye contact with operators to the greatest extent possible (always face equipment). Never approach equipment from a blind spot or angle.
- All heavy equipment shall be equipped with reverse warning devices (i.e., backup alarms) that can be significantly heard over equipment and other background noise. Reverse signaling lights shall be in working order.
- When feasible, two-way radios shall be used to verify the location of nearby ground personnel.
- When an operator cannot adequately survey the working or traveling zone, a guide shall use a standard set of hand signals to provide directions. Flags or other high visibility devices may be used to highlight these signals.

Clearance Ground clearance around heavy equipment may significantly reduce hazards posed during heavy equipment operations. The following outline the clearance requirements during heavy equipment operations:

- Ground personnel shall always yield to heavy equipment.
- Ground personnel shall maintain approximately 100 feet of clearance from all active heavy equipment, unless an approved, job-specific hazard analysis that identifies any special precautions is completed and communicated to the appropriate operators and ground personnel.
- Contractor Site supervisors/managers shall designate areas of heavy equipment operation and ensure that all ground personnel are aware of designated areas. Designated areas shall include boundaries and travel routes for heavy equipment. Travel routes shall be set up to reduce crossing of heavy equipment paths and to keep heavy equipment away from ground personnel.
- When feasible, site supervisors/managers shall set up physical barriers (e.g., caution tape, orange cones, and concrete jersey barriers) around designated areas and ensure that unauthorized ground personnel do not enter such areas.
- Operators shall stop work whenever unauthorized personnel or equipment enter the designated area and only resume when the area has been cleared.
- Operators shall only move equipment when aware of the location of all workers and when the travel path is clear.
- Ground personnel shall never stand between two pieces of heavy equipment or other objects (i.e., steel support beams, trees, buildings, etc.).
- Ground personnel shall never stand directly below heavy equipment located on higher ground.
- If working near heavy equipment, ground personnel shall stay out of the travel and swing areas (excavators, all-terrain forklifts, hoists, etc.) of all heavy equipment.
- Ground personnel shall never work near heavy equipment during times of inadequate lighting.
- Personnel shall keep all extremities, hair, tools, and loose clothing away from pinch points and other moving parts on heavy equipment.

Personal Protective Equipment: At a minimum, all ground personnel and operators outside of heavy equipment shall wear the following:

- High visibility, reflective safety vest that is visible from all angles and made of fluorescent material and orange, white, or yellow reflective material (ensure that vest is not faded or covered with outer garments, dirt, etc.)
- ANSI-approved hard hat

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- ANSI-approved safety glasses with side shields
- ANSI-approved hard toe safety boots
- Hearing protection as needed
- Appropriate work uniform (i.e., full length jeans/trousers and a sleeved shirt; no tank, crew tops or loose clothing permitted).

Utilities: When contacted by heavy equipment, aboveground and underground utilities may cause severe injuries or death as a result of electrocution, explosion, etc. The following outline the requirements while performing heavy equipment operations that may lead to contact with aboveground or underground utilities:

- Always be aware of surrounding utilities
- Ensure all equipment (i.e., dump trailers, loaders, excavators, etc.) is lowered prior to moving underneath of aboveground utilities.
- Ensure utilities are cleared and identified prior to beginning any earthwork moving operation. Contact the local utility service providers for clearance prior to performing work.

Training, Inspection, and Maintenance:

- Only designated, qualified personnel shall operate heavy equipment.
- Operators shall have all appropriate local, state, or federal licenses or training to operate a designated piece of heavy equipment.
- Operators shall be evaluated through documented experience (resume) and a practical evaluation of skills (field tests). Operators shall be knowledgeable and competent in the operation of a designated piece of heavy equipment.
- All heavy equipment shall be inspected and, if necessary, repaired prior to use. Operators shall not operate heavy equipment that has not been cleared for use. All machinery and mechanized equipment will be certified to be in safe operating condition by a competent individual seven days prior to on-site operation, and is valid for one year.

Operation:

- All heavy equipment shall be operated in a safe manner that will not endanger persons or property.
- All heavy equipment shall be operated at safe speeds.
- Always move heavy equipment up and down the face of a slope. Never move equipment across the face of a slope.
- Slow down and stay as far away as possible while operating near steep slopes, shoulders, ditches, cuts, or excavations.
- When feasible, operators shall travel with the "load trailing," if the load obstructs the forward view of the operator.
- Slow down and sound horn when approaching a blind curve or intersection. Flagmen equipped with 2-way radio communications may be required to adequately control traffic.
- Operators shall remain in cab while heavy equipment is being loaded.
- Always keep heavy equipment in gear while in operation. Do not place in neutral.
- All heavy equipment shall be shut down prior to and during fueling. Do not smoke or use electrical devices while fueling. Fuel shall not be carried in or on heavy equipment, except in

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permanent fuel tanks or approved safety cans.

- Turn off heavy equipment, place gear in neutral and set parking brake prior to leaving vehicle unattended. Also, place buckets and blades on the ground and place hydraulic gear in neutral. Heavy equipment parked on slopes shall have the wheels chocked.
- Never jump on to or off a piece of heavy equipment.
- Never exit heavy equipment while it is in motion.
- Passengers shall only ride in heavy equipment designed for occupancy of passengers.
- Never ride on the outside of a piece of heavy equipment (e.g., tailgates, buckets, steps, etc.).
- Site vehicles must be parked in a safe place away from heavy equipment.
- Operators shall never push/pull "stuck" or "broken-down" equipment unless a spotter determines that the area is cleared of all personnel around and underneath the equipment.
- Operators shall wear seatbelts at all times while operating heavy equipment.
- If designated for work in contaminated areas/zones, equipment shall be kept in the exclusion zone until work or the shift has been completed. Equipment will be decontaminated within designated decontamination areas.
- Equipment left unattended at night adjacent to traveled roadways shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of that equipment, and shall not be closer than 6 feet (or the regulatory requirement for the work location) to the active roadway.
- Pneumatic-tired earthmoving haulage equipment, with a maximum speed exceeding 15 miles per hour, shall be equipped with fenders on all wheels.
- Lift trucks shall have the rated capacity clearly posted on the vehicle, and the ratings are not exceeded.
- Steering or spinner knobs shall not be attached to steering wheels. High lift rider industrial trucks shall be equipped with overhead guards. When ascending or descending grades in excess of 5%, loaded trucks shall be driven with the load upgrade.
- All belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded when exposed to contact by persons or when they otherwise create a hazard.
- All hot surfaces of equipment, including exhaust pipes or other lines, shall be guarded or insulated to prevent injury and fire.
- All equipment having a charging skip shall be provided with guards on both sides and open end of the skip area to prevent persons from walking under the skip while it is elevated.
- Platforms, foot walks, steps, handholds, guardrails, and toe boards shall be designed, constructed, and installed on machinery and equipment to provide safe footing and access ways.
- Substantial overhead protection shall be provided for the operators of fork lifts and similar equipment.

7.8 Traffic/Pedestrian Safety**:**

The following requirements can be implemented for simple work operations occurring on or near roadways. The Contractor will utilize flagmen during activities that require work in local streets and/or schools/pedestrian crossings.

- Work activities by Contractors will not restrict emergency vehicle access
- Follow the Virginia Work Area Protection Manual on Standards of Traffic Control when necessary

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- Use of Signs and Cones to Direct Traffic: Traffic signs and cones are used to direct traffic away from and around personnel. Cones and signs are effective only if they give oncoming drivers enough time to react *and* make it clear how traffic should react.
- Signs and Traffic Control Devices: Signs are required in addition to cones in almost all traffic control situations.
- "Road Work Ahead" or "Men Working" is the basic warning signs. They are orange, a minimum of 48"x 48" square, and equipped with a self-supporting base. In general, advanced signs should be placed well ahead of the cone taper to warn traffic of the upcoming controls. If required by law, they can be placed on the roadside in advance of the cone taper.
- Directional Arrow signs should be placed ahead of the cone taper to clearly indicate which direction traffic should flow.
- Warning Flags are often put in cones at the leading edge of a taper to make the taper more prominent. They have no legal status and are not to be used on AlexRenew projects. Use a "Road Work Ahead" sign instead.
- Additional protection will be provided by City of Richmond Police in high-traffic areas to include residential areas and pedestrian crossings.

7.9 Flammable and Combustible Materials**:**

- Storage containers in storage racks are to be stored a minimum of 50 feet from the nearest structure. All containers are to be electrically grounded. Drip trays are to be provided under container spigots.
- When transferring a flammable/combustible liquid an electrical bond (metal-to-metal) is to be established between the two transfer containers prior to transfer. Storage containers are to be equipped with an approved safety faucet and flexible metal hose. A pressure-vacuum relief vent is required for containers of flammable liquids. Metal-to-metal contact may also be established by using a grounding strap.
- Spill containment is required for all solvent dispensing areas. The secondary containment dike will be designed for 110 percent of the maximum stored solvent volume, with the capacity for 24-hour holding time.
- The maximum amount of flammable solvent (used for cleaning purposes) at any workstation is limited to one quart. Variance from this requirement requires the prior approval of the City of Alexandria Fire Marshal.
- Maximum use must be made of fireproof metal cabinets to store flammable liquids inside any structure.
- Rags, kimwipes, etc., that are contaminated with flammable liquids are to be placed in a safety container equipped with a fusible link lid.
- All containers of flammable liquids must be properly identified as to contents.
- All manually handled flammable liquids shall be handled in approved safety containers. The exception is pint-sized squirt bottles.
- Where flammable solvents must be used in wash containers, such as for paint sprayer cleaning, the container must be provided with a self-closing or fusible lid.
- Flammable liquid in portable containers in excess of the amount required for one day of use must be stored in approved flammable liquid storage cabinets.
- Flammable storage cabinets will be kept closed, and will be latched each time after use.
- "NO SMOKING" signs are to be posted in areas where flammable liquids are stored, dispensed, or used.

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- An adequate supply of fire extinguishers will be located to support each area where flammable or combustible liquids are handled or stored.

Additional information and requirements for handling and storage of specific flammable liquids are detailed in Material Safety Data Sheets (MSDS), which must be obtained and maintained on site for each solvent in use.

7.10 Compressed Gases**:**

Compressed air or other compressed gases in operating pressures exceeding 10 pounds per square inch gauge (psig) are not to be used to blow dirt, chips, or dust from clothing while it is being worn. Compressed air for other types of cleaning (other than clothing/personnel) is limited to 30 psig.

The use of blown compressed air is to be controlled, and proper personal protection equipment or safeguards utilized, to protect against the possibility of eye injury to the operator or other persons.

Compressed air or gases are not to be used to empty containers of liquids in cases where the operating pressure can exceed the safe working pressure of the container.

Compressed gases are not to be used to elevate or otherwise transfer any hazardous substance from one container to another unless the containers are designed to withstand the operating gas pressure with a safety factor of at least four.

Compressed Gases (Cylinders):

- Cylinders are not to be used unless they bear Department of Transportation (DOT) markings showing that they have been tested as required by DOT regulations.
- Cylinders must never be dropped, struck, or permitted to strike each other violently. Cylinders may be moved by tilting and rolling them on their bottom edges.
- Valve protection caps must always be kept on cylinders when they are being moved or stored, and until ready for use.
- Cylinder valves are to be kept closed except when gas is being used or when connected to a permanent manifold. Valves of empty cylinders must be closed.
- Cylinders must never be used as rollers or supports, or for any purpose other than carrying gas.
- Cylinders of compressed gas shall be stored in areas where they are protected from external heat sources such as flame impingement, intense radiant heat, electrical arc, or high-temperature steam lines.
- Cylinders are to be stored in an assigned area, with full and empty cylinders stored separately. Stored fuel gases and oxygen cylinders are to be separated by at least 20 feet, or by a fire wall of at least 5 feet high that has a fire-resistance rating of at least ½ hour.
- Oxygen, Nitrogen, Helium, or Freon cylinders may be stored or transported either in an upright or horizontal position. Acetylene cylinders must always be kept in an upright position. All horizontally placed cylinders are to be secured by chocks or ties to prevent rolling.
- Cylinders are to be secured to a fixed object by chain or equivalent fastening device whenever they are placed in an upright position. The protective cap is not to be removed or the cylinder valve opened until the cylinder is secured.
- Repair of leaks must never be attempted on a pressurized system. System pressure should be reduced to atmospheric pressure as rapidly as possible, and the supervisor notified immediately.

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- Compressed gas cylinders must be legible marked for the purpose of identifying the gas content with either the chemical or trade name of the gas. Such marking is to be by means of stenciling, stamping, or labeling, and must not be readily removable. Whenever practical, the marking is to be located on the shoulder of the cylinder. Positive identification of the gas in any cylinder is required before connecting cylinders for use.
- Compressed gas cylinders in portable service are to be conveyed by suitable trucks, to which they are securely fastened. All gas cylinders in service must be securely held in substantial racks or secured to other rigid structures so that they will not fall or be knocked over.
- Gas cylinders moved by hoist must be handled in suitable cradles or skip boxes. Any slings used for this purpose must be specifically designed for that cylinder handling.
- Cylinders must not be placed where they might form part of an electrical circuit.
- Transfer of acetylene from one cylinder to another or mixing of gases in a cylinder is prohibited.
- Oxygen cylinders are never to be stored near:
  - Highly combustible materials, especially oil and grease;
  - reserve stocks of acetylene or other fuel gas cylinders; or
  - any other substance likely to cause or accelerate fire.
- Compressed oxygen is never to be used: as
  - breathing air;
  - to purge pipelines, tanks, or any confined area;
  - to supply a head-pressure tank;
  - in pneumatic tools;
  - in oil preheating burners;
  - to start internal combustion engines;
  - for ventilation;
  - for cleaning clothing; or
  - in any other way as a substitute for compressed air.

7.11 Underground Work**:**

A mandated pre-job meeting will be held prior to the start of the underground work. Participants include all interested parties such as state representatives if needed, CMC, Contractors, and fire and law enforcement representatives.

- The pre-job meeting subject items will include all of the following facets of the work:
- Personnel requirements
- Ventilation
- Excavation
- Ground support
- Diesel engine operation
- Emergency plans
- Codes of safe practices
- Rescue crew and first aid procedures
- Protective equipment requirements
- Underground communication systems
- Fire prevention and control
- Explosives safety (if used)
- Dust control

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- Transportation and haulage
- Electrical equipment
- Lighting requirements
- Laser safety
- Occupational exposure sampling

General Safety:

- The Contractor Site Supervisor will ensure than every reasonable effort is taken for the safety and health of employees, whether or not specified in this procedure.
- Fence, cover, over or otherwise safeguard to control unauthorized entry underground.
- At least one designated employee must be on outside duty when anyone is working underground.
- A check-in/check-out procedure will be provided at the surface that will ensure those aboveground can accurately determine and identify those underground.
- Unnecessary accumulations of water, muck, timber rails, and similar materials will be avoided underground.
- Gunite, shotcrete, and pump crete lines will be secured to prevent uncoupling of sections under pressure.
- Air hose (¾ inch or larger) requires a safety device (whip check) to prevent the hose or line from whipping if disconnected under pressure.
- Inform oncoming shift of any hazardous occurrences or conditions.
- Any buried air, fuel, or utility line requires a "buried line" caution sign. Overhead utility lines should be marked also to prevent accidental contact.

All employees involved with underground work will be instructed in hazard recognition and measures to take to eliminate the hazards including:

- Air monitoring and ventilation
- Illumination
- Communications
- Flood control
- Personal protective equipment
- Emergency procedures, including evacuation plans
- Check-in/Check-out procedures
- Explosives
- Fire prevention and protection
- Mechanical equipment

7.12 Poisonous Plants, Insects and Animals Indigenous to Virginia Plants:

- *Giant Hogweed* can be identified by its height, the size of the leaves and its flower clusters. It grows to be approximately 15 feet tall with leaves spanning 2-5 feet. It has a thick green stem with purple areas and hairy flower stakes. A combination of contact with the sap from this plant and exposure to the sun can cause painful burning blisters within 24 to 48 hours. It can also cause purple and black painful scares.
- *Blue-Green Algae* technically known as cyanobacteria are naturally occurring and found in lakes

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and streams. The algae become very abundant in warm in undisturbed waters. Exposure to the algae in small quantities over a long period of time or large quantities of a short period for time can cause liver damage and/or damage to the nervous systems.

- *Poison Ivy or Poison oak* grows in a vine or a shrub formation. The tissues of these plants contain poisonous oil which is irritating to the skin. The leaf formation is two leaves on the side and one down in the middle. The edge of the leave have varying amounts of notches. In the spring the poison ivy is a red color. Later in the spring they become a shiny green. In autumn the leaves turn yellow, red, and orange. Small greenish flowers grow in bunches close to the leaf joins, later in the season berries form that are whitish and waxy looking. Wash the area several times with soap water if exposure is confirmed. If blisters, redness, and/or itchiness develop, treat with calamine lotion, Epsom salts, or bicarbonate of soda.

Poisonous Insects and Animals:

- *Fleas, mites, and chiggers* are not poisonous but can cause skin irritation. Symptoms of a bite may include small, raised lesions, pain or itching, inflammation of the skin, allergic-type reactions in people that are hypersensitive. Clean the affected area with soap and water. Call a physician if the pain or itching persistent or there are signs of infection, and/or if you have a fever.
- *Tick* bites can have similar skin irritations as the fleas, mites and chigger bite but can also carry Lyme disease. The following are symptoms of Lyme disease: a rash at the site of the bite, have flu like symptoms, fever, headache, nausea, jaw pain, sensitivity to light, red eyes, muscle aches and/or a stiff neck. See your doctor immediately.
- *Black and Yellow Argiope female spider* spins its web in a circle. The male will spin a smaller web with a zigzag pattern. The female grows to be inch and a half long. The male grows to be ¾ inch long. The spider has a small front body section with silver hairs on it. The abdomen (large back section) is egg shaped with black and yellow coloring. The spider lives in fields and gardens in shrubs, tall plants and flowers.
- *Black Widow Spiders* are a venomous spider. It injects a small amount of poison when it bites. Reports indicate the human mortality rate is less 1%. The female Black Widow is shiny black, usually with a reddish hourglass shape on the underside of her spherical abdomen. Her body is about .5 inches long, 1.5 inches when the legs are spread. Adult males are harmless to humans, about half the female's size, with smaller bodies, and longer legs and usually have yellow and red bands and spots over the back as do the immature stages. Their webs are erratic in appearance, and the silk is stronger than almost all other spiders.
- *Brown Widow Spider* is not as dangerous as some other widow spiders because the Brown Widow Spider is less likely to bite someone and injects less poison.
- *Fire Ants* can inflict painful stings. The ant mounds are found in warm, sunny locations such as landscape beds, lawns, around trees and shrubs, along sidewalk cracks and against buildings. If disturbed, theses ants are generally aggressive and can inflict painful stings.
- *Timber Rattlesnakes* are venomous snakes. They measure from 3-3.5 feet or more in length. Two color patterns are commonly found: a yellow phase, which has black or dark brown cross bands on a lighter background color of yellow, brown or gray, and a black phase, which has dark cross bands on a dark background. Scales are ridged, giving this rattlesnake a rough-skinned appearance. The timber rattler has a broadly triangular head with many small scales on the crown of the head bordered by a few large scales.
- *Northern Copperheads* are venomous snakes. Northern Copperheads are medium-sized snakes. Adults typically range in length from 26 to 42 inches. The distinctive feature is the copper or

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bronze-colored top and sides of the head. This species also uses camouflage, in the form of tan, brown and rust-colored bands that allow the copperhead to disappear easily into dried up, fallen leaves, sticks and limbs.

- *Eastern Cottonmouths* are venomous snakes. Cottonmouths or water moccasins are common residents of southeastern swamps; however, they can be found in almost any wetland within their range. This species is highly variable in coloration, but is usually plain brown or olive with darker blotches or bands. These snakes average 3 to 31/2 feet long and are very stout-bodied. Cottonmouths have a reputation for being vicious and aggressive. When confronted cottonmouths will often stand their ground and not retreat.

8.0 RESPIRATORY PROTECTION

Contractors, who plan to use respirators as a part of their work operations, are required to forward to the CMC copy of their written Respiratory Protection Program.

Refer to 29 CFR 1910.134 for requirements of this OSHA standard.

9.0 HSE SURVEYS

The CMC and the AlexRenew Safety Coordinator may conduct periodic HSE surveys of the site. There will be an interval of self-inspections conducted every two weeks with documentation of results sent to the Site/Project management. Any HSE discrepancy observed shall be reported to the appropriate Contractor representative for immediate correction.

These HSE surveys do not relieve Contractors of their responsibility to self-inspect their work on a regular basis and document audit results with appropriate corrective action(s) with copies and communication sent to CMC and to conduct their work in a safe and environmentally compliant manner.

10.0 PLANNING AND OBSERVATION PROCEDURES

In order to achieve the AlexRenew's goal of Zero Incidents, the following shall be implemented by the Contractor. The SPA, the TSA, and the SOR process require each worker to receive on-the-job training from their direct Supervisor. Contractor employees shall also be trained and educated on their individual responsibilities contained in these tools by the Contractor after mobilization.

10.1 Safe Plan of Action: The Safe Plan of Action (SPA) is developed by the crew assigned to perform the work with guidance from their Supervisor. The Supervisor identifies the work area and task to be performed and then leads the crew in developing a Safe Plan of Action.

Creating the SPA requires the Supervisor to solicit crew participation in identifying hazards and hazard control measures such as PPE, training requirement, permits, procedures, etc.

Members of the team are required to review and sign the SPA document on a daily basis to indicate their participation, their understanding of the plan, and their agreement to follow the plan.

10.2 Task Safety Awareness: The Task Safety Awareness (TSA) meeting is a daily HSE briefing associated with the task(s) that are scheduled for the crew during the work shift.

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These meetings generally take from two to ten minutes and address the HSE measures specific to the tasks.

TSA meetings shall be conducted at least daily and whenever a task presents a change of hazards from the previous tasks.

10.3 Safety Observation Reports: The Safety Observation Report (SOR), is a proactive process designed to identify and document HSE-related acts and conditions in the work environment. All Contractor's supervisors are required to participate in the SOR process by generating written SORs and turning them in to the CMC Site/Project Management at least weekly.

The SOR allows any site worker to record observed proper or improper HSE practices and identifies the cause of any deficiencies so that corrective action can be taken.

11.0 ACCIDENT/INCIDENT INVESTIGATION

A formal accident investigation must be conducted when an accident occurs, including non-injury incidents, most first-aid type accidents, and environmental releases or spills.

11.1 In the event of a workplace accident, injury, or illness, the most important immediate actions are to provide medical assistance to those who may need it and to ensure the safety of others that may be affected or acting as emergency responders.

11.2 Securing the accident scene is essential to ensure an effective accident investigation. No materials or equipment shall be moved made until a review of the accident is completed, except when securing equipment or materials that could result in further injury.

11.3 Obtain witnesses' names, permanent addresses, and signed statements of their complete factual observations.

11.4 All accident investigations must be documented using the Accident Investigation Report. All required reports should be completed and copies provided within 24 hours to the CMC Site/Project Manager.

12.0 DRUGS, ALCOHOL, AND CONTRABAND

AlexRenew strictly prohibits the use, sale, attempted sale, manufacture, possession, distribution, cultivation, transfer, or dispensing of any illicit substance. This includes the use or possession of prescription medications without a valid prescription.

CMC and all Contractors shall implement a Drug, Alcohol, and Contraband Policy, including post incident testing, which meets the requirements of the CMC's policy. Key elements of the CMC's policy, except where prohibited by law, are:

- Pre-access/Pre-assignment testing current to within six months prior to initial assignment to work on the AlexRenew project.
- Post-incident testing of any worker involved in a project-related workplace incident that results, or could have resulted, in injury to any person requiring medical treatment beyond first aid, any

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type of medical attention given by a third-party medical services provider (hospital, clinic, doctor, etc.), a motor vehicle incident, or property damage. Post-incident testing must be conducted as soon as possible after the incident occurs.

- Reasonable suspicion testing upon reasonable suspicion by CMC or Contractor management that a worker is under the influence of a prohibited substance. In such cases, worker(s) shall be immediately removed from the project and surrender their project credentials. Personnel so removed may only be allowed to return with a negative test result and written permission of the CMC.
- Periodic random or unannounced testing for workers randomly selected or chosen by job classification or worksite. The percentage of the workforce or the number of workers, selected for testing shall be specified on a project specific basis and stated in the project's Hazard Assessment Safety Action Plan.
- Possession or use of alcohol in a CMC-, AlexRenew -, or Contractor-provided vehicle is prohibited.
- Any worker whose drug or alcohol test is positive will be removed from the project and required to surrender their project credentials.
- Refusal to submit to drug or alcohol testing, or attempts to tamper with, adulterate, dilute, or otherwise tamper with a test sample will be treated the same as a positive test result.
- Contractor shall adopt collection, chain-of-custody, and other related procedures consistent with sound industry practice.
- The AlexRenew drug and alcohol testing requirements may be more stringent than the CMC minimums. If so, AlexRenew's requirements shall be enforced.
- If the CMC suspects that a worker is in possession of illegal drugs, alcohol, or contraband, the CMC may request that the individual voluntarily submit to a search of his or her person, personal effects, vehicles, lockers, and baggage. The CMC may also conduct random searches of individuals entering or leaving the work site. All searches will be performed by local law enforcement.
- Any suspected contraband will be confiscated and may be turned over to law enforcement, as appropriate. If an individual is asked to submit to a search and refuses, that individual will be considered insubordinate, will surrender their project credentials, will be escorted off the job, and will not be allowed to return.
- CMC shall have the right to review the Contractor's Drug, Alcohol, and Contraband Policy and to audit the Contractor's implementation of their program at the jobsite.
- Contractors shall comply with all applicable federal, state, and local alcohol and drug-related laws and regulations.

13.0 MEDICAL AND EXPOSURE MONITORING

Contractors involved with operations, such as those involving hazardous waste, asbestos or lead abatement, certain carcinogenic compounds, etc., shall describe their medical and exposure monitoring procedures and their proposed compliance methods in their HSE Action Plan or HASP.

Employees involved in these operations shall have met, prior to any fieldwork activity or exposure, the medical requirements of applicable regulations or standards, including, but not limited to, a baseline medical exam and periodic update exams, as required.

Employee medical requirements and limitations shall be considered prior to the use of certain types of PPE, such as respirators.

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14.0 IMMINENT DANGER SITUATIONS

Upon discovery of any situation that may, in the opinion of the AlexRenew or CMC, reasonably be expected to cause serious physical harm, illness, death, or significant environmental damage, the Contractor Site/Project Management or HSE representative shall suspend the related work immediately. Work may resume only after the HSE concern(s) have been corrected, to the satisfaction of AlexRenew and CMC.

- Examples of "imminent danger" situations may include, but are not limited to the following:
- Visual observations of contamination, waste, etc. in a non-HAZWOPER work area
- Falls from elevations
- Excavations not properly sloped or shored
- Electrocution hazards
- Work activities posing injury hazards to the general public
- Operation of vehicles, machinery or heavy equipment in an unsafe manner
- Improper Lock Out/Tag Out procedures

In addition to the immediate suspension of work, the procedure for correction of imminent danger situations follows the "HSE Adherence Policy" set forth below. If site personnel are required to evacuate the area, personnel will exit through designated emergency routes and gather in a designated area for a head count, etc.

15.0 HSE ADHERENCE POLICY

Contractors are required to comply with the applicable HSE requirements and regulations. The procedures below outline a three-step, progressively administered system to correct compliance problems. However, if in the opinion of the AlexRenew non-compliance issues are considered to be severe, Contractors' contracts may be terminated at any time.

15.1 Action Level One: If a Contractor fails to comply with an applicable HSE standard, Site/Project Management will issue a written "Notice of HSE Non-Compliance" to the Contractor's site representative. Site/Project Management will also forward a "Warning Letter for HSE Non-Compliance" and a copy of the Notice of HSE Non-Compliance to the Contractor's President or Operations Manager.

15.2 Action Level Two: If item(s) of HSE non-compliance are not corrected by Action Level One, or if the Contractor repeatedly fails to comply with the applicable HSE regulations, the AlexRenew Safety Coordinator will issue a "Written Notice of Temporary Job Suspension" to the Contractor. The Contractor's work may not resume until the AlexRenew Safety Coordinator, Site Project Management and the Contractor's Division Manager or equivalent have met and the Contractor has proposed corrective actions that are acceptable to the AlexRenew Safety Coordinator and CMC.

Actions that may be considered include, but are not limited to:

- Removal of certain Contractor personnel from the project,
- Alteration of the Contractor's job procedures, or
- Implementation of corrective action by AlexRenew with back charges to the Contractor.

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The Contractor shall not resume work until the CMC accepts the proposed corrective actions. CMC will document and keep on file the meeting results in the form of meeting minutes.

15.3 Action Level Three: If Action Levels One and Two do not result in the Contractor's HSE performance being brought into compliance, contract termination may result. AlexRenew may terminate the contract after verifying with the AlexRenew Safety Coordinator that the HSE adherence procedure has not been followed and after giving the Contractor applicable notice. Contractors that have a contract terminated in accordance with this procedure are ineligible to participate in future AlexRenew projects until they have implemented and demonstrated corrective actions to improve their deficiencies. Only written approval from the AlexRenew's Engineer - Director can reinstate a Contractor's eligibility.

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Asbestos Awareness Program

(29 CFR 1910. 1001)

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ALEXANDRIA RENEW ENTERPRISES

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Asbestos Awareness Program

Scope:

This program applies to all occupational exposures to asbestos at AlexRenew covered by the Occupational Safety and Health Act, except as provided in paragraph (a)(2) and (3) or this section.

I. BACKGROUND

"Asbestos" is a general term for several naturally occurring, fibrous minerals that were used extensively in building construction materials prior to 1970. Asbestos has a number of desirable characteristics that are different from other materials. Some of its more desirable characteristics include: fire resistance, immunity to most chemicals, and biological indestructibility. This last trait, however, is what makes it so dangerous. Human lung tissue cannot effectively remove small asbestos fibers, which produce irritation, scarring, and other tissue damage. In the late 1960's, there was enough evidence linking asbestos to human diseases to prompt the federal government to ban most of its previous uses. It is now an established fact that asbestos is responsible for a variety of cancers, as well as other debilitating and even fatal diseases.

Commercially, asbestos was popularly used in pipe coverings, flooring products, paper products, anti-friction materials (like brake lining and clutch facing,) roofing materials, and coating and batching compounds. In additions, a lot of asbestos containing material (ACM) was used in inaccessible or structurally related areas of buildings. Often this makes ACM more difficult to locate since it may be concealed by walls or ceilings that resemble materials of no concern. Over time ACM may deteriorate of its own accord or it may be subject to physical abuse such that fibers are released. The chief hazard of asbestos exposure is inhalation of its microscopic size fibers. Although visible size fibers are of little concern themselves, they may be indicative of other, more minute and dangerous materials.

Currently two government agencies regulate Asbestos Containing Material (ACM) in buildings.

A. The Environmental Protection Agency (EPA) - The (EPA) is responsible for eliminating the usage of asbestos in buildings, requiring the positive identification of all (ACM) in schools and for its proper procedures of removal.

B. The Occupational Safety and Health Administration (OSHA) - (OSHA) sets the occupational safety exposure limits for workers working with or around asbestos in the workplace.

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II. DEFINITION OF TERMS

Asbestos	Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.
Asbestos Containing MaterialMaterial (ACM)	Any material containing more then 1%
Assistant Secretary	The Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.
Authorized Person	Any person authorized by the employer and required by work.
Building/Faculty Owner	Is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.
Certified Industrial Hygienist (CIH)	One who is certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.
Director	The Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.
Employee Exposure	Exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
Fiber	A particulate form of asbestos five micrometers or longer, a length-to-diameter ratio of at least 3 to 1.
High-Efficiency Particulate Air (HEPA) Filter	A filter capable of trapping and retaining at least 99.97% or 0.3 micrometer diameter

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	mono-disperse particles.
Homogeneous Area	An area of surfacing material or thermal system insulation that is uniform in color and texture.
Industrial Hygienist	A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.
PACM	Presumed Asbestos Containing Material
Presumed Asbestos Containing Material	Thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of a material as (PACM) may be rebutted pursuant to paragraph (j) (8) of this section.
Regulated Area	An area established by the employer to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limits.
Surfacing Material	Material that is sprayed, trawled on, or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural member, or other materials on surfaces for acoustical, fireproofing, and other purposes.)
Thermal System Insulation (TSI)	ACM applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.
Thermal System Insulation ACM	Thermal System Insulation which contains more then 1% asbestos.

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III. RESPONSIBILITIES

A. Department Directors will be responsible for implementing and ensuring the compliance with AlexRenew's Asbestos Awareness Program within their department.

B. The AlexRenew Safety Coordinator has he following responsibilities under AlexRenew's Asbestos Awareness Program:

1. To continue to build and develop AlexRenew's Asbestos Awareness Program.
2. Select a qualified laboratory to take and/or analyze asbestos samples.
3. Evaluate credentials of all contractors performing asbestos encapsulations, enclosures, removals, and disposal within AlexRenew.
4. Insure all affected AlexRenew employees receive immediate and proper medical care.
5. Keep permanent records of all asbestos sampling results, enclosures, encapsulations, removals, and disposals.
6. Keep complete and thorough documentation of all medically affected or treated ASA employees.
7. Respond to all AlexRenew related concerns dealing with asbestos.
8. Identify all asbestos containing materials within AlexRenew facilities whenever possible.
9. Ensure outside contractors hired to perform work in AlexRenew facilities are aware of the location of asbestos containing materials.

C. The Engineering and Technical Services Department has the following responsibilities under AlexRenew's asbestos Awareness Program:

1. Identify asbestos containing material within AlexRenew facilities whenever possible.
2. Ensure outside contractors hired to perform work in AlexRenew facilities are aware of the location of asbestos containing materials.
3. Contacting the Safety Coordinator whenever major renovation or work is performed that may disturb asbestos containing materials.

D. AlexRenew Supervisors have the following responsibilities under AlexRenew's Asbestos Awareness Program:

1. Contacting the Safety Coordinator whenever major renovation or work is performed that may disturb asbestos containing materials.
2. Ensuring that outside contractors are aware of asbestos containing materials that they may encounter in their work area.

E. All AlexRenew employees will be responsible for:

1. Learning about AlexRenew's asbestos awareness program
2. Familiarizing themselves with the instructions and rules of the program.

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IV. OBJECTIVES

A. The objectives of AlexRenew's Asbestos Awareness Program are as follows:

1. Educate AlexRenew employees on how to identify suspected asbestos containing materials.
2. Inform AlexRenew employees of health related problems associated with asbestos.
3. Inform AlexRenew employees of proper procedures to follow when coming in contact with suspected asbestos containing materials.
4. Ensure that all AlexRenew employees working in a probable asbestos containing area, are forewarned of its location and are knowledgeable about what do if/when contact is made.
5. Ensure that materials containing asbestos and that remain in AS buildings are kept in safe condition and are routinely inspected.
6. Ensure that proper records are kept of all asbestos removals, identifications, exposures, and medical information.
7. Ensure proper laboratory selection for the sampling and identification of asbestos.
8. Ensure safe and legal removal of asbestos by contractors hired by AlexRenew.

V. TYPES OF ASBESTOS CONTAINGING MATERIALS

It has been estimated that approximately 88% of asbestos used has been in the construction industry. The presence of asbestos in a building material is not necessarily a cause for concern unless the ACM deteriorates or is physically damaged and fibers are released into the air. This program identifies the general types of ACM likely to be found in the workplace such as:

A. Sprayed-on-Insulation – This material was typically applied to structural beams and columns as well as to undersides of floor decks, roofs, and occasionally walls. It is often discovered during renovations, demolition, or special maintenance procedures. It usually has a fluffy texture and readily crumbles to the touch. For this reason it is especially prone to fiber release when disturbed.

B. Surface-Applied Ceiling Coating – This material was used as a combination fire retardant/acoustical insulation. It tends to give a lumpy texture to the ceiling surface. Because these ceilings were designed to be exposed to view they are usually painted. In some cases, however, the original ceiling has been concealed with a lower suspended ceiling.

C. Pipe Coverings and Boiler Insulation – Many pre-1970 (and even later,) hot water, steam, and other high temperature equipment used asbestos in its insulation, often in high concentration. Although these surfaces usually cover a fairly small area, they are especially vulnerable to water and vibration damage, as well as frequent disturbance

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from maintenance procedures.

D. Miscellaneous Asbestos Containing Materials – This group of materials tends to be hard and for the most part non-friable. Some examples of this group include floor title, transit wallboard, cooling tower fill material and old cement piping. Fortunately these materials do not ordinarily pose a risk of fiber release unless they are subjected to cutting, sanding or crushing.

E. Special Products- Because asbestos possesses the unique characteristics of heat-resistance, products such as automobile brake pads, clutch discs, and mufflers often contain asbestos. Asbestos also may be found in high temperature gaskets and valve packing material. Any of the products mentioned on the previous page that contain asbestos may release fibers, depending on the condition of the product. i.e. how badly it has deteriorated.

VI. PROCEDURES TO FOLLOW WHEN SUSPECTED MATERIAL IS FOUND

A. Do not allow the material to be disturbed in anyway.

B. Inform all employees that may come into contact with the material that it may contain asbestos and it should not be disturbed.

C. Contact the Safety Coordinator immediately, so that proper identification of the material can be made in a timely fashion.

VII. ASBESTOS SAMPLING AND LABORATORY SELECTION

When necessary, the Safety Coordinator will select a qualified laboratory to take and/ or analyze asbestos air and bulk samples. The selected laboratory will have current accreditation for such procedures and use analytical and reporting methods consistent with prevailing criteria for asbestos identification.

VIII. ASBESTOS REMOVAL

The Engineering and Technical Services Department with assistance from the Safety Coordinator will evaluate all asbestos encapsulations, enclosures, and removals. The Safety Coordinator will evaluate the credentials of all contractors bidding for asbestos abatement within AlexRenew.

IX. MEDICAL SURVEILLANCE

All AlexRenew staff who have occupational contact with asbestos as or above the eight hour

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time-weighted average limit (TWA) of 0.1 fiber per cubic centimeter (f/cc) or the thirty minute excursion limit of 1.0 f/cc of air will receive medical surveillance. All examinations and procedures must be performed by or under the supervision of a licensed physician, at a reasonable time and place, and at no cost to the employee. Moreover, all medical surveillance will be carried out in accordance with VOSHA 1910.1001 Appendix H.

X. RECORDS

The Safety Coordinator/Personnel Department will keep a record of all medical information on employees exposed to asbestos.

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Alexandria Renew Enterprise

Laboratory Chemical Hygiene Plan

Title: Main Laboratory J-Building (Chemical Hygiene plan (CHP))
Type: Guideline [Safety]
Reference: 29 CFR part 1910 Appendix A, B and AlexRenew older revision in file.
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Approvals:

Prepared by: _____ Approved by _____

Laboratory Manager

_____ Date

_____ Date

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Revisions

Rev. №.	Date	Description
08	07/07/2018	Yearly update per 29 CFR part 1910 Appendix A, B.
07	04/14/2014	Yearly update.- - - update per personnel changes, staff title changes, change to the header, and updates to sections 11.0, 12.0, 13.0, and 14.0
06	08/30/2012	Yearly update per 29 CFR part 1910 Appendix A, B., including plant rebranding, personnel changes, Staff title changes, Sections 4.0, 13.0, Appendixes B, C, and D.
05	05/18/2011	Yearly update per 29 CFR part 1910 Appendix A, B.
04	05/24/2010	Yearly update per 29 CFR part 1910 Appendix A, B.
03	03/18/2009	Yearly update per 29 CFR part 1910 Appendix A, B.
02	04/16/2008	Yearly update per 29 CFR part 1910 Appendix A, B.
01	05/17/2007	Yearly update per 29 CFR part 1910 Appendix A, B.
	1992 -2006	Original (1992), Lab staff review 06/05/20026 other versions years 2006, 07/13/2000, and 08/06/1999

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1.0 SUMMARY OF LABORATORY CHEMICAL USE AND SAFETY

Safety Data Sheet (SDS) for chemicals in use at the AlexRenew laboratory can be download from the supplier website. SDS can also obtain from www.login.sitehawk.com [Login: alexandriarenew, Password: Water123!, Company ID: 1597.] VERY HAZARDOUS CHEMICALS are those with a hazardous rating of 3 or higher (CERCLA or NFPA rating) for flammable, health, or reactive rating. QA Officer is considered as a designated laboratory Chemical Hygiene Officer.

2.0 SAFE CHEMICAL HANDLING GENERAL

- Use Personal Protective Equipment (PPE) according to the test Standard Operating Procedure (SOP.)
- Each analyst must review relevant SDSs and must practice safety precautions before starting a new test or project.
- Each analyst must sign-off on a document to acknowledge that SDS is reviewed and that they are aware of expected safety requirements.
- Keep chemicals in their original containers unless taking some out for reagent preparation purposes. Use clean spatula to scoop dry chemicals.
- Store chemicals by general potential hazard and compatibility.
- Return chemicals to proper location after use; secure lids, and clean container sides of residue.
- Inspect stored chemicals and solutions for deterioration, corroded caps, leaks, shelf life and expiration dates.
- Give special attention to hazardous materials. Highly toxic substances need to be stored and handled according to manufacturer's recommendations. Example: strong oxidizers should be separated from other chemicals.
- Wear lab coats, goggles, and gloves when receiving and storing acids or caustics; and TKN/TP digestion reagent.
- Store alcohol and flammable liquids in a flammable storage refrigerator when not in use.
- Label all prepared reagents or solutions per the individual SOP. Dispose of chemicals that are past their shelf life according to the laboratory and/or AlexRenew policy.
- Label all waste containers to indicate their contents. Record waste collection start date. Move full waste chemical containers to storage sites.
- Transport containers or bottles of hazardous chemicals, reagents, acids, or caustics in rubber buckets.
- On how to prepare dilute acid or caustic from concentrated solution, refer in individual analytical SOPs:
- 25 % HCl used for cleaning and 50% Sulfuric acid used in digesters analysis are dispense from a re-pipetter; kept these re-pipetter in hoods and on spill containment trays.

3. 0 PROCEDURES FOR POLLUTION PREVENTION: CHEMICAL INVENTORY, PROCUREMENT, RECEIVING, AND STORAGE

- Inventory of chemicals and consumable items is done as required by all laboratory staff. Chemicals are bought commercially as needed bases in order to reduce the amount of materials kept on hand and to reduce the analysts risk and exposure (minimum amount is purchased and stored.)
- Chemicals are SEGREGATED/STORED/LABELLED according to hazard class compatibility in either over the counter cabinets, under hood cabinets (ventilated for acid/caustics),

or in flammable refrigerators for flammable items. Caustics and acids must be stored separately.

- HCl acid is used in cleaning glassware and sample jugs: Use caution when washing glassware and other laboratory containers. Follow applicable cleaning procedures specified in individual SOPs.

4.0 CHEMICAL WASTE DISPOSAL

- Store spent COD and TNT vials in a designated waste painter bucket.
- TKN/TPO_4 waste generated from AA is segregated and collected in painter buckets and stored in a designated storage area. Label each TKN/TP bucket with start to use date. After each use of TKN/TP AA, inspection waste Accumulation area. If observation commenting, document and initial on the logsheet. Once full bucket must be transport to storage room in the basement of building J. Inspect the storage area as needed.
- Expired chemicals are segregated and kept in cabinet № 880 in NE corner of the nutrients lab (module J-128). Waste or expired chemicals are periodically removed from the lab and stored temporarily in a locked room for eventual proper disposal by Hazmat contractor.
- All other nonhazardous laboratory chemicals can be safely poured into drain. The drain from the lab goes through a neutralization sump before going to the plant head works.
- All E. coli and Fecal materials waste which comes in contact with samples or is expired must be autoclaved in labeled biohazard bags before disposal.
- Broken glass is placed in a marked blue box waste receptacle so marked, segregated and disposed.

5.0 CHEMICAL SPILLS

- Spills must be handled per SDS.
- Spill control kit “Spil– X Ansul” for Acid, caustic and solvent is located by the wall in the laboratory hallway (green box).

6.0 HOOD SAFETY PRACTICES- DESIGNATED AREA FOR EYE PROTECTION

- Hood sashes must be down and exhaust blowers ON when digesting any sample. If hood is deactivated due to power interruption and TKN/TP digestion is in progress, immediately evacuate lab to avoid inhaling H_2SO_4 fume and possible Hg vapor.
- Digestion blocks are to be kept back inside a working hood at least 6 inches away from glass sashes.
- Any spill inside a hood must be promptly cleaned. Avoid buildup of dust and chemicals on the counter top of the hood.
- Acid spill containment trays inside a hood must be emptied, neutralized and cleaned as needed.
- Do not overload the hood work surface with apparatus or work material as this will affect the air flow in the hood.
- Use recommended eye safety glasses/goggles when using the hood for digestion, chemical preparation, and e-coli setup with UV light ON.

7.0 SAFE GLASSWARE HANDLING PRACTICES

- Use of borosilicate glassware is recommended for all laboratory application except for special experiments that use UV or other light source.
- To protect accidental breakage, bottles, jars and other containers with acids, alkalis, flammable or combustible substances should be transported in rubber carriers.

- Pour contents of volumetric flask holding the neck and supporting the base with other hand.
- Carry a volumetric flask by holding the neck and supporting base with other hand.
- A small beaker should be supported by holding it around the side with one hand. If the Beaker is 500 ml or larger, support it from the bottom with the other hand.
- Flasks or beakers containing hot or boiling liquids should always be cooled before any additional chemical is added.
- Use heat resistant gloves, tongs when handling hot glassware.
- Discard any glassware that is cracked or chipped.
- Attach a piece of clear tubing or sand polish any rough edges of glass tubing.
- Insert pipettes with a slight twisting in to a pipette bulb; avoiding too much pressure.
- Do not pick up broken glass with bare hands. Use dustpan and sweeper, wear goggles/gloves. Dispose in a "Broken glassware container".
- Place a sign of warning on hot glassware. Glassware that contains chemicals must be identified as to its content.

8.0 ELECTRICAL SAFETY PRACTICES

- Do not use equipment with frayed wires.
- Make sure equipment is properly grounded, plugged into a surge protector, and used on outlet that safely handles rated voltage and amperage. For a Circuit Breaker Directory list, refer to file://fileserver/labarchive/LAB_PM. This directory is organized by laboratory module
- All laboratory electrical outlets and light switches are numbered. The circuit breaker directory list includes: breaker rating (amps), Type of equipment hooked to a particular outlet, breaker, amperage, and breaker panel number. All breakers are located in the Pipe Access Space room in the basement of J-Building. A print out of the directory is posted by the hallway in a red binder.
- In case of emergencies, all power can be shut off from the red "panic" power button located in the hallway outside of the main lab doors.

9.0 EYE SAFETY, OTHER PERSONAL SAFETY PRACTICES and PPE USE

- Eye Safety -Wear recommended safety glasses. For detail, refer section 10 below.
- Wear eye protection in all designated areas including areas such as chemical fume hoods, counter tops with acids or caustics around it, sample custody scullery sinks.
- Safety glasses must be worn when performing the following procedures:
  - Sample digestion and distillation such as COD, TKN/TPO_4 and Volatile acids.
  - Reagent preparation (especially acid and bases.)
  - Jug washing when using acid
  - Cleaning glassware when using acid.
  - Sample preservation.
  - Titrations for volatile acids and Alkalinity.
  - Blow down of autoclave.
  - Receiving chemicals
  - Disposing off wastes and broken glass.
- Use UV goggles:
  - When using the Biosafety hood in Micro Lab with UV light is ON.
  - Reading e-coli under UV box.

  - Accessing UV field laboratory.
- Eye glasses/goggle sanitation and storage- (Use only your own goggles/glasses). Steps in cleaning goggles/glasses:
  - Rinsed with water and shake off excess water. Blotted dry and put in goggles cabinet for UV disinfection.
  - Glass wipes may also be used for cleaning.
  - As needed used goggles/glasses are sanitized in Sellstrom 2000 Goggle Cabinet with UV Lamp. To use Sellstrom 2000 Goggle Cabinet follow the steps below:
    [A] In cabinet, place glasses: fully opened, four per shelf with interior nose piece facing lamp. Place goggles per shelf with nose piece towards lamp. Max capacity 35 glasses per goggles.
    [B] Close cabinet door, lock, turn timer's knob fully clockwise until it stops for 5-minute exposure. Indicator light below timer knob glows blue confirming light is on. WARNING: UV BULB IN CABINET HARMFUL TO EYES/SKIN; DO NOT VIEW WHEN LIGHT ON; DOOR MUST BE CLOSED/LOCKED TO INSURE SAFETY.
- Visitors -All visitors must wear safety glasses.
- Compressed gas cylinders such as acetylene and N_2 and He should be secured (chained), supported, and stored away from ignition sources in well-ventilated areas. Transport gas cylinder on dolly secured by a chain.
- Wear non-skid, closed shoes. No open-toe or sandals in the lab.
- Unless medically required, no overhead music or other audio hearing device is allowed in the lab while working.
- Use lab coats and gloves; when handling samples, chemicals, glassware, washing jugs, and general clean up. Use recommended gloves for specific jobs per section 10.2 below. Gloves may be reused, cleaned or discarded in a manner consistent with their use and manufacturers recommendations.
- After any chemical or sample handling, wash hands and arms thoroughly even if gloves have been worn.
- Do not use mouth suction when pipetting or for starting a siphon.
- Do not lift from the back. Lift from the knees.
- No chemicals or samples are allowed in office area.
- Do not store food or drink in lab reagent or sample refrigerators.
- Eating, drinking, or smoking is prohibited in the laboratory.
- Steel tip safety shoes and hard hat are required when going out on the plant; this includes when collecting any grab samples.
- Working in the Lab Alone -lab staff normally do not work alone in the lab except weekends, or emergency due to staff shortage. When working alone, do the following:
  - Analysis schedule should not include TKN, COD, T-PO_4, or Volatile acid digestion and distillation.
  - If Volatile Acid digestion is needed, an Operator Technician will be in the lab for safety with the laboratory staff until the test is completed.
  - After hours test using acids, caustics, corrosive or hazardous chemicals requires the presence of another laboratory staff.

10.0 APPROVED / RECOMMENDED PPE

- Safety Glasses/Goggles

  - *Monogoggle VPC*, provides chemical splash protection and easily fits over prescription glasses, with fog free lens. (Example Fisher Cat № 17-283-2)
  - *UVEX goggles* offers chemical splash protection, impact protection, some UV radiation protection and has anti-fog lens. (Example Fisher Cat № 17-253.)
  - *Face Fit UV absorbing goggles* for use with AA. (Example Fisher 17-981-24A) Face-shields (Example Fisher Cat № 17-274) provides splash protection to be used in conjunction with goggles such as in working with conc. acids
  - *UVEX ASTRO OTG 3001 Safety Glasses.* Polycarbonate lens. Fits over prescription glasses; molded in side shields and brow guard offer added protection to side and above eye. (Fisher Cat № 19-084-892)
- Gloves
  - Furnace (high temperature): Use gloves which stand a temperature of up to 550 °C heat such as QRP high temperature static dissipater gloves. (Example Fisher Cat № 19-048-705) This particular glove withstands temperature from -134 °C to +705 °C. Note: may require the use of goggle or face shield as in section 10.1 above.
  - Autoclave: Use Terry Autoclave gloves; 100 % cotton absorbs moisture; gauntlet. (Example Fisher Cat № NC9381849)
    - Working with the autoclave requires the use of goggle or face shield, during de-pressurizing chamber.
    - Make sure the pressure of the chamber drops to zero before releasing drain valve
  - Reagents, acids, and caustics: Heavy gauge Nitrile long gloves, lined or unlined, for general cut, abrasion, water permeability protection (Example Fisher Cat № 11-391-139A) or Two tone Flocked Lined Neoprene Latex Gloves; Oil and chemical resistant. (Fisher Cat. 11-392-33A –D)
  - Samples: N-Dex Nitrile gloves powder free, disposable, hypo-allergenic
- Lab Coats are required in the lab during sample and reagent/chemical handling
- PPE required during sample collection in the filed:
  Gloves and lab coat (as weather permits), Hard hat, and Steel Tipped Safety Shoes. Note: AlexRenew provide the fund required to purchase safety shoes.

11.0 FACILITY PPE SAFETY ENGINEERING CONTROLS EQUIPMENT AND MAINTENANCE

11.1 SPILL Kits:
  - Spill – X Ansul Spill Control Kit: - Located on West side of Main Lab Aisle (J-134), mounted on the wall between Wet Chem (J-134) and BOD/Solids Lab (J-132.)
  - Alkali and Acid Spill Kits: - Located under counter cabinet #211, West side Lab Aisle J-134, below Spill –X Spill Kit.

11.2 First aid kits (Kit location in the laboratory)
  - Wall mounted in the Lab Office area.
  - Wall mounted main lab aisle J-134, northwest end just inside main door.

11.3 Fume hoods
  - Velometer, used to measure fume hood face velocity – kept in under counter drawer 213 West side Lab
  - Laboratory staff performs visual check and face velocity reading of all hoods monthly.

11.4 Rubber bucket carriers

- Buckets are kept in the same place where acids or caustics are stored.

11.5 Safety Goggle Cabinets

- Sellstrom 2000 Model 2000 (GR-01Goggle Storage Cabinet with Hyper-Germicidal Lamp (Fisher # 17-936-6) located in Sample Custody, J-127.
- Sellstrom Goggle Storage Cabinet with Hyper-Germicidal Lamp located in main lab aisle labeled VISITOR EYE PROTECTION (GR-01), mounted on east wall, just inside north main lab doors.

11.6 wall mounted eyewashes

- There are three (3) wall mounted eye-washes, identified as "Emergency eye wash"
  - Lab Aisle North End, near main doors (EYE-COR-01)
  - Lab Aisle South end, next to Micro-Lab (EYE-MIC-01
  - Sample Custody Southwest corner next to aisle door (EYE SC-01)
- To operate: pull down the white bar to activate the water nozzles on each end of the bar.
- Eyewashes are flushed monthly for 15 minutes. This is documented at file://fileserver/labarchive/LAB_PM.

11.7 Emergency Drench Hoses

There are seventeen EMERGENCY DRENCH HOSES located throughout the lab.
The location and labels are as follows:

Module	Location	Designation (Name)
BOD J-132	West island, South sink	DREN-BOD-01
	West island, North sink	DREN-BOD-02
	East island, North sink	DREN-BOD-03
Wet Chemistry J-131	West island, South sink	DREN-WET-01
	West island, North sink	DREN-WET-02
	West island, North sink	DREN-WET-03
	Sink, South wall	DREN-WET-04
Organics/Nut, J-128	Aisle island, West sink	DREN-COR-01
	Aisle island, East sink	DREN-NUT-01
Metals J-129	Aisle island, West sink	DREN-COR-02
	Aisle island, East sink	DREN-MET-01
Microbiology, J-130	West island, North sink	DREN-MIC-01
	East island, South sink	DREN-MIC-02
	East island, North sink	DREN-MIC-03
Sam Custody, J-127	Island South sink	DREN-SC-01
	Island North sink	DREN-SC-02
	North wall, on East side of scullery sink	DREN-SC-03
Sam Receiving, J-124	Sink on West wall	DREN-REC-01
PT Lab, J-126	South wall sink	DREN-PT-01
PT Staging, J-123	West wall counter	DREN-PTSG-01

- To operate the emergency drench hose, pick up and squeeze the black lever at the hose base.

- PM emergency drench houses monthly by flushing for 15 minutes. Document PM at file://fileserver/labarchive/LAB_PM

11.8 Safety/Drench showers

There are seven Safety/Drench showers throughout main lab and Pretreatment (PT) staging room, one per lab-module. Each has a sign indicating it is a drench shower.

They are located and labeled as follows:

Module / Room	Label	Location
Sample Custody	SHOWER-SC	middle of south corridor in front of fume hood
BOD/Solids	SHOWER-BOD	middle of south corridor
Nutrient/Organics	SHOWER-NUT	middle of the north corridor
Wet Chemistry lab	SHOWER-WET	middle of the north corridor
Metals lab	SHOWER-MET	middle of the north corridor
Micro lab	SHOWER-MIC	middle of the north corridor
PT Staging	SHOWER-PTSTAG	middle of the room

- To operate safety/drench shower, pull down the triangle end of the metal extension to activate the water flow.
  - PM safety shower monthly by flushing for 15 minutes to insure adequate flow; this is documented at file://fileserver/labarchive/LAB_PM

11.9 Fire extinguishers

Amerex Dry Chemical ABC fire extinguishers, Model A402, 195 psi, 20 lbs Quantity 4 total;

- Located and labeled as follows:
  - Lab office hallways across from office J-117.
  - Sample Custody NE wall next to door to office.
  - North end of lab aisle east side next sample custody door. and South End of lab
  - South end of lab aisle on east wall next to main exit doors.
- To operate fire extinguishers:
  - Hold upright.
  - Pull ring pin
  - Start back 8 feet. Aim at base of Fire.
  - Squeeze lever. Sweep side to side
- PM –Fire extinguishers are inspected monthly for charge by maintenance or outside contractor specialize in the area of Fire prevention.

11.10 Ventilation

- There are 10 (ten) eight foot Labconco (Model 96850) automatic by-pass chemical fume hoods through out the lab; designed for 1660 cfm air volume at average face velocity of 100 fpm. They are labeled and located as follows:

Module / Room	Label	Location
Sample Custody Lab (J-127)	HD-SC-01	South Wall
Nutrient/Organic Lab (J-	HD-NUT-01	North wall
Nutrient/Organic Lab (J-	HD-NUT-02	South wall on east side
Nutrient/Organic Lab (J-	HD-NUT-03	South wall east side.

BOD/Solids Wall (J-132)	HD-BOD-01	South wall east side.
Wet Chemistry lab (J-131)	HOOD-WT-01	North wall
Wet Chemistry lab (J-131)	HOOD-WT-02	South wall
Metals lab (J-129)	HOOD-MET-01	North wall
Metals lab (J-129)	HOOD-MET-02	South wall

- PM hoods monthly by measuring face velocity readings taken using a Velometer. Reading should be average between 90-120 fpm; recorded velometer reading result and other general inspection at the electronic PM file at file://fileserver/labarchive/LAB_PM
- ASHRAE 110 confinement/performance test must be performed on all fume hoods by outside agency.
- There are is one 5 foot Labconco (Model 60816) Automatic by-pass chemical fume hood in The PT lab. It is designed for 960 cfm with average face velocity of 100 fpm. Labeled PT-HD. PM and documentation on this hood is the same as the eight-foot fume hoods
- Canopy Hoods – Are located and designated as follows:

Module / Room	Label	Location
BOD Module, J-132	CANOPY-1	North wall, drying oven for total
	CANOPY-2	South wall, using muffle furnace for
Wet Chemistry module, J-	CANOPY-3	North wall
Microbiology, J-130	CANOPY-4	North wall, east side
	CANOPY-5	North wall, west side; autoclave
	CANOPY-6	South wall
Metals, J-129	CANOPY-7	North wall
Organic/Nutrient module, J-	CANOPY-8	North wall
Sample Custody, J-127	CANOPY-9	North wall over scullery sink
PT Staging, J-123	CANOPY-10	North west wall over scullery sink

11.11 Neutralization Sump.

- Acidified samples maybe disposed of using the jug washing sink by sample custody module. Laboratory sinks are connected to the system in such a way that all waste goes to Acid Neutralization/Dilution Tank before it goes to the headway of the plant. The Neutralization sump tank is located on the North-West side of the laboratory next to HVAC airway area
- Semisolid sludge samples are only disposed of in the sink equipped with garbage disposals. The only sink in the lab equipped with disposal is the big sink in sample custody room.

11.12 D.I. Water Cutoff

The whole system can be turned off in the Central DI Water room (J125). Individual DI Water cut offs (red valve) located above the ceiling tiles in each Lab module allows local cut off for any system leaks; they are designated and located in the lab modules as follows:

Module / Room	Location
Sample Receiving, J-124	West wall above sink East end Canopy Hood 9 over sink

Sample Custody, J-127	center island column North side over sink
BOD/Solids, J-132	East island, North-side support column above sink. West island, North side support column over sink
Wet Chemistry, J-131	West island column side over sink East island column, South side
Micro Module, J-130	South East corner wall between Canopy Hood 6 and main lab door West side of Canopy Hood 6, s wall
Metals Lab, J-129	West island, North side, above counter cabinets North wall, above fume hood HD-MET-01
Nutrients Lab J-128	West instrument island column, West side above AA South East corner, above fume hood HD NUT-02

12.0 TRAINING

- Staff has access to electronic and/or printed copy of an updated CHP. CHP must be reviewed annually. Other reference material may be used during annual CHP training.
- Access to 2001 29 CFR 1910.1450: Current electronic CFR could be accessed on the OSHA Website.
- Staff has access to all laboratory SDSs. Updated SDS issued by a chemical manufacture must be reviewed by staff. As part of an initial training, new employs must read all SDS on all chemicals used during analysis.
- Laboratory safety contact is the laboratory QA officer or a person designated/appointed.

13.0 EMERGENCY SOP

- Handle all emergencies per current AlexRenew protocol.
- For accidents and emergencies that require Rescue Squad, follow this procedure:
  - From any lab phone, call 9-911
  - Give your name
  - Nature of injury
  - Give location as Alexandria Renew Enterprises,
  - The street address
  - 1500 Eisenhower Ave.
  - Building -J
  - Admin/Lab,
  - Answer any other questions and DO NOT hang up until the 911 operator has done so.

14.0 ALEXANDRIA RENEW ENTERPRISES STANDARD OPERATING PROCEDURES FOR PERSONAL INJURY OR FIRE RESPONSE

Medical emergency, personal Injury or fire response – Refer to the plant “EMERGENCY ACTION PLANS”.

15.0 MONITORING AND MEDICAL CONSULTATIONS

Staff monitoring and necessary medical consultations will be provided for as required by the standard, if there is an incident with physical injury or exposure to chemical; services will be coordinated through the HR department.

Alexandria Renew Enterprises Document: Confined Space Written Program Training: All Staff Approval Initials: Original Issue Date: 11/10/14 Revision Date: 10/29/18	

CONFINED SPACE PROGRAM

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Alexandria Renew Enterprises

CONFINED SPACE SAFETY PROGRAM

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II. RESPONSIBILITY

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- B. Common Types of Hazards

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- B. Establishment of a List of Confined Spaces
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- B. Overview
- C. Permit Approval System
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- A. Overview
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D. Permit/Pre-Entry Checklist
E. Confined Space Safety Equipment List
F. Log of Permit Issue
G. Proof of Training Participation
H. Definitions
I. Semi-Annual Review
J. Local Rescue Squad and Fire Department Annual Tour
K. Rescue Procedures

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Alexandria Renew Enterprises Document: Confined Space Written Program Training: All Staff Approval Initials: Original Issue Date: 11/10/14 Revision Date: 10/29/18	

CONFINED SPACE SAFETY PROGRAM

DRAFT

I. PURPOSE

To establish and communicate planned procedures and safety requirements for the protection of employees and applicable contractor/vendors from hazards associated with confined spaces.

II. RESPONSIBILITY

The Chief Executive Officer of Alexandria Renew Enterprises mandates that this program be established, implemented and maintained jointly by the Maintenance Manager, Operations Manager, and the Safety Coordinator. It is an integral part of every job. Each employee must observe and practice the policies and procedures of this Confined Space Safety Program.

III. DEFININTION OF CONFINED SPACE

A confined space is an area that: (a) has limited openings for entry and exits; (b) which may contain or produce toxic air contaminants; (c) has a high concentration of an inert gas; (d) is not intended for continuous occupancy; and/or (e) may have an oxygen deficient atmosphere. Confined space is also any area that restricts access for rescue/retrieval.

A. COMMON CONFINED SPACES

1. Storage Vessels
2. Tanks, Boilers and Bins
3. Duct Systems
4. Manholes
5. Pits and Trenches
6. Stacks or Crawl Spaces
7. Pumping, Lift Stations or Sewers

B. COMMON TYPES OF HAZARDS

1. Oxygen Deficiencies
2. Combustible/Flammable/Explosive Atmospheres
3. Toxic Gases or Vapors
4. Physical Hazards

    - Grinding
    - Agitators
    - Corrosive Chemicals

- Biologicals
- Electricals
- Rodents/snakes/spiders
- Lighting (Poor Visibility)
- Insecure Footing
- Steam
- Falling/Tripping
- Moving Parts
- Wind
- Weather

IV. IDENTIFICATION OF CONFINED SPACES IN OUR OPERATIONS

A. PROCEDURE

Alexandria Renew Enterprises has organized a multi-departmental committee headed by the Company's Safety Coordinator. This committee analyzes each routing and non-routine task performed by employees and identifies "Permit Required" confined spaces. *Listed below are departments and position titles of this committee:*

Department	Position Title
Maintenance	Maintenance Manager
Maintenance	Team Leader A
Maintenance	Team Leader B
Maintenance	Team Leader C
Operations	Operations Manager

The committee has identified the necessary testing and monitoring equipment, tools and personal protective equipment for each confined space entry. The Company has purchased and will maintain such equipment as needed.

B. ESTABLISHMENT OF A LIST OF CONFINED SPACES

Attached as Exhibit A is a List of Confined Spaces by location area. This list is evaluated and updated, if applicable, on a semi-annual basis. Additionally, any future procedural changes, construction additions or modifications to the facility will include a full evaluation of the confined space considerations.

Definition

A "Full Time" or "Permit Required" confined space is an area that requires a permit for each entry.

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A "Conditional" or "Non-Permit" confined space is a work area that is not a confined space under normal conditions. Abnormal conditions or non-routine tasks cause the area to become a potentially hazardous area (e.g. an ammonia leak in a freezer); and a permit is required for entry.

C. IDENTIFICATION SYSTEM

The confined space safety committee has developed a two-point identification system for all confined spaces

1. All confined spaces will be identified with a sign permanently posted on or near entrance points. The sign will identify which type of confined space it is.

   NOTE: *See **Exhibit B for confined space permit signage** specifications.*

2. Prior to employee or contractor confined space entry, a confined space permit will be secured on or near the point of entrance to the confined area (See Exhibit D). Barrier tape should mark the area of operations to avoid unauthorized entry to the area.

V. ENTRY INTO A CONFINED SPACE – PERMIT SYSTEM

A. DEFINITION OF CONFINED SPACE ENTRY

Confined Space Entry is defined as the point at which any part of an entrant's body breaks the plane of an opening into the space. Each entry must be permitted.

B. OVERVIEW

Each task to be performed in a confined space has been analyzed and the resulting procedures, tools and protective equipment have been defined by the committee on the Job Site Analysis Records (See Exhibit C). The department head will provide a site analysis record for each task in each confined space. These site analysis records are kept in the same location as the confined space equipment. The supervisor(s) involved and the authorized employee(s) will use these records to complete the entry permit (See Exhibit D).

C. PERMIT APPROVAL SYSTEM

Whenever a request for a permit occurs, the employee and the supervisor will review the Job Site Analysis Record, which lists the work to be done, and corresponding procedures to be followed. The employee and the supervisor will complete and record the required information on the permit. Situational changes are addressed, if applicable. "Permit required" space entries must be approved by signature, by the supervisor's supervisor before the entry occurs (See Exhibits C and D).

D. PROCEDURES FOR PERMIT APPROVAL

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1. Work-site Evaluation

   Utilizing a Job Site Analysis Record and the Permit for the applicable task, the employee performs necessary preparation for entry and records efforts and results onto the permit.

2. Testing and Monitoring

   Again, the established Job Site Analysis Record will outline testing and monitoring requirements. The employee will perform and record applicable testing and monitoring results onto the permit. If applicable, continuous or periodic testing of the atmosphere in the immediate vicinity of the workers within the space may be required and shall be accomplished. The workers will immediately leave the permit space when any of the gas monitor alarm set points are reached as defined. Workers will not return to the area until a SUPERVISOR who has completed the gas detector training has used a direct reading gas detector to evaluate the situation and has determined that it is safe to enter. All employees included in any confined space entry procedures will receive and have documented gas monitor training.

3. Required Protective Equipment, Tools and Safety Procedures

   The reference point for protective equipment, tools and safety procedures is outlined on the pre-entry checklist for the task at hand. The employee will secure required protective equipment, tools and confirm safety procedures and record this procurement onto the permit by signature. See Exhibit E, Confined Space Safety Equipment List.

4. Assignment of Safety Monitors

   A specific employee is designated as a safety monitor and listed on the permit. Once the permit is completed, procedures are followed and the employee(s) is ready to enter the space, the applicable supervisor must physically check the pre-entry procedures prior to approval of the permit.

E. RECORD-KEEPING REQUIREMENTS

When the permit expires, the work is completed or a change of personnel occurs, the used or completed permit is returned to and maintained in the EHS Manager's office for the previous year entries. Each department head will keep a log on permit issue, start and finish date (See Exhibit F). Safety Coordinator will document the semi-annual review of the Confined Space Entry Program. This documentation is retained with the canceled permits.

VI. EMERGENCY AND RESCUE PLANS

A. OVERVIEW

DRAFT

Each confined space entry procedure has been analyzed and potential emergencies identified. A specific rescue procedure and required equipment are outlined in the procedures established and recorded on a job site analysis record.

B. INTERNAL RESCUE TEAM

Alexandria renew Enterprises does not have an authorized internal rescue team. All rescues will be performed by the trained and professional Alexandria Fire Department.

C. OUTSIDE RESCUE TEAM

The Local Outside Rescue Service (Alexandria Fire Department) will be familiarized with the potential hazards and locations of each confined space which may confront them when called on to perform a rescue at our facility. This may include a tour of the plant by applicable local paramedics and firemen. A record of this procedure is maintained on file if an inspection or tour is obtained. The Local Outside Rescue Service must perform an on-site confined space rescue drill at least once every 12 months. Documentation of this on-site confined space rescue drill must be on file for review by any regulatory agency. The Alexandria Fire Department will be asked to notify AlexRenew if the rescue team becomes unavailable during any time of a confined space entry. If a notification is made that the Fire Department is no longer available to perform a rescue then all confined space work will cease and will not resume until the Fire Department is available.

D. SAFETY ATTENDANT PERSONNEL

The safety attendant is designated by name on the Confined Space Entry Permit. This individual is stationed outside the confined space while a co-worker is inside the space. This attendant is trained to recognize hazards associated with the task and in applicable rescue procedures including notification measures (i.e. walkie talkies) for obtaining assistance.

This attendant does not have other duties while serving in this capacity and must maintain visual and/or verbal contact with the co-worker entrant.

The permit will specify the safety attendant and the emergency contact person and method of emergency contact.

Even in an emergency situation, the attendant shall not enter the confined space until help arrives, and then only with the protective equipment as outlined by the permit rescue procedures.

The attendant is also responsible and has authority to prevent unauthorized personnel from entering the area.

E. EMERGENCY PLAN

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The plant has established written emergency evacuation plan as required by 29 Code of Federal Regulations, Section 1910.38 (a), to ensure employee safety from fire and other emergencies.

VII. TRAINING

A. OVERVIEW

The Company has developed, implemented and will maintain a comprehensive Confined Space Entry Program training plan for all plant personnel and applicable third-party personnel. Part of this plan includes initial and on-going employee training. Training participation is recorded on an acknowledgement form (See Exhibit G). This record is maintained on file.

B. COMPREHENSIVE TRAINING PLAN

The Company's confined space entry process involves two training segments and two basic groups. Each group and their related training outline is listed below.

1. All Company Personnel –and Applicable Third Party Personnel

   General Overview of Alexandria Renew Enterprises Confined Space Entry Program via classroom and practical training and review of written program.

   Specifics covered are:

   - Purpose
   - Responsibility
   - Common Confined Spaces
   - Identification Plan & List of Confined Spaces
   - Permit System
   - Gas Monitoring Equipment
   - Entry Safety Equipment
   - Emergency and Rescue Plans
   - Training Plan

   Signed Proof of Training Participation is maintained on file (See Exhibit G).

2. All Authorized Company and Third Party Management, and Supervisory (Third Party Personnel, as applicable)

   Targeted Confined Space Entry Program via Job Site Analysis Records for each confined space/task.

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The following personnel will receive in addition to part one training specific confined space entry training related to the confined spaces involved in their job areas:

- Management personnel responsibility for employees who may perform work in a confined space;
- Employees who may serve as a safety attendant or rescue team member;
- Third-party contracted employees responsible for employees who perform work or act as a safety attendant/rescue team member.

Safety attendants and rescue personnel will practice confined space rescue one every twelve (12) months. A record of this training will be maintained on file.

A minimum of one (1) employee per shift will be certified at all times in basic first-aid and cardiopulmonary resuscitation (CPR) skills. A record of this training is maintained in the First Aid CPR Binder located in the EHS Managers Office.

3. Alexandria Renew Enterprises utilizes classroom training, practical, online training, and the written Confined Space Program as the base of our employee-training program.

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Alexandria Renew Enterprises Document: Confined Space Written Program Training: All Staff Approval Initials: Original Issue Date: 11/10/14 Revision Date: 10/29/18	

Exhibit A

LIST OF CONFINED SPACES

Listed below by department is a list of confined spaces. Each space is identified as either a full-time or conditional confined space.

CONFINED SPACE	LOCATION	TYPE PERMIT (Full or Conditional)
Manholes/Sewers	Various	Full
Gravity Thickener Tanks	Building C	Full
Methanol Tanks	Building M	Full
Biological Reactor Basins	Building 44	Full
Centrate Pre-Treatment	Building 69	Full
Pasteurization Tanks	Building 55	Full
Ferric Chloride Tank	Building L	Full
Aluminum Sulfate Tank	Building L	Full

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Exhibit B

CONFINED SPACE PERMIT SIGNAGE

1. A fixed placard identifying that area as confined space is permanently affixed to or very near to the point of entry of all confined space areas.

DANGER
CONFINED SPACE
ENTER BY
PERMIT ONLY

DANGER
NON-PERMIT
CONFINED SPACE
AUTHORIZED PERSONNEL ONLY

CAUTION
CONFINED
SPACE

DANGER
CONFINED SPACE
AUTHORIZED PERSONNEL ONLY

A red, black and white sign reading "DANGER – CONFINED SPACE – ENTER BY PERMIT ONLY" will indicate a full-time confined space.

A yellow and black sign reading "CAUTION – CONFINED SPACE" will indicate a conditional confined space. This may also be a red, black and white sign reading "DANGER – NON-PERMIT – CONFINED SPACE – AUTHORIZED PERSONNEL ONLY" or "DANGER – CONFINED SPACE – AUTHORIZED PERSONNEL ONLY".

When the confined space does not allow for any signage location (Man-Holes, Pits or Wet-Wells), identification may be if possible designated with Red, Black and/or Yellow Stenciling or Bordering.

2. Standard black/yellow barricade tape is utilized in marking off the work area where a confined space entry is being performed (if applicable).

3. Any area that is so indicated with Confined Space Signage should follow all procedures for Confined Space Entry before entering this space or area. NOTE: Confined Space Entry is defined as the point at which any part of an entrant's body breaks the plane of an opening into the space.

4. Each entry into a confined space is identified by a permit attached to the point of entry for the duration of the confined space operations.

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Exhibit C

CONFINED SPACE ENTRY JOB SITE ANALYSIS RECORD

CONFINED SPACE _____

TASKS TO BE PERFORMED _____

DEPARTMENT (S) INVOLVED _____

EXACT LOCATION _____

Place a check in the applicable boxes in right side columns. Entrants must initial or record N/A in left column.

#	CONSIDERATIONS	NO	YES	N/A	HAZARDS		
					CHEMICAL	HEALTH	PHYSICAL
1	Oxygen Levels High/Low						
2	Toxic Atmosphere:						
3	Toxic Atmosphere:						
4	Continual or Periodic Monitoring Required				If yes, what is time frequency:		
5	Flammable Atmosphere						
6	Respirator – Type:						
7	Unfavorable Natural Ventilation						
8	Engulfment Hazard – Type:						
9	Temperature Extremes (High/Low)						
10	Noise Level Hazards						
11	Barricades – Type:						
12	Type(s) of Ventilation Needed:						
13	Slick Wet Surfaces						
14	Vertical Rung Safety Ladder						
15	Remote Start Equipment						
16	Inlet/Outlet Feed Lines (Pipes)						
17	Static Electric						
18	Overhead Falling Objects						

Required equipment for this confined space.

1) Harness _____ 8) Non Spark Tools _____ 15) Line/Pipe Blanks _____
2) Hoist _____ 9) Communications _____ 16) Lockout/Tagouts _____
3) Tripod _____ 10) Monitoring Equip. _____ 17) Hearing Protection _____
4) SCBA _____ 11) Gloves & Boots _____ 18) Forced Air In _____
5) Lifeline _____ 12) Eye Protection _____ 19) Exhaust _____
6) Barricades _____ 13) Protective Clothing _____ 20) Other _____
7) Head Gear _____ 14) Non Spark Light _____

Committee Approval of this Procedure (Signatures): _____

_____

_____

_____

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Date: _____

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STEPS TO BE TAKEN PRIOR TO AND DURING ENTRY:

1. Follow normal lockout/tagout procedures
2. Make sure tank is empty
3. Open hatch
4. Monitor for oxygen deficiency/flammable/explosive/atmospheric/toxic gases or vapors/physical hazards
5. If safe to enter
    a. Install ventilating blower, hose, and saddle vent at opening
    b. Put on harness and life line
    c. Make sure safety attendant is present
    d. Maker sure you continuously monitor for hazardous conditions before and during entry
    e. Enter if safe to do so

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Exhibit E-1

CONFINED SPACE SAFETY EQUIPMENT LIST

The following are specific equipment recommended for compliance with 1910.146 Confined Space Entry.

1) Types of ventilation – will vary from fans to forced air and forced exhaust, depending on the tasks. (Be sure exhaust is non-spark type.)

2) Types of ladders – fiberglass or approved wooden type.

3) Types of tools – definitely "non-sparking".

4) Non-sparking light – 8 watt fluorescent – 50' cord.

5) Recommendation for gases monitoring equipment:

- We recommend a three Gas Monitor that includes gas sensors for LEL, O2, & CO with calibration kits.

6) Safety Harnesses – Considering all situations, there is only one option here when the tasks, safety, versatility and rescue/recovery are considered. DBI/SALA – ANSI Class III Full Body Harness. They are designed to lower or raise a human and arrest the most severe free falls. A non-spark producing lifeline should be secured to the harness prior to entry.

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Exhibit E-2

CONFINED SPACE EQUIPMENT

1. Gas Monitor – LEL, O2 & CO
2. Forced Air Blower with 25 ft. Duct
3. Warning Cones
4. Roll of Black and Yellow “CAUTION” Tape
5. Full Body Harness
6. 10 ft. Safety Lanyard
7. Tube Hoist
8. 10 ft. Hoist Chain
9. Tripod with 3 Red Flags
10. Non-Spark Work Light
11. Communication Radios (2-4)
12. Ball Valve Locking Device
13. Gate Valve Locking Device
14. Single Pole Breaker Locking Device
15. Double Pole Breaker Locking Device
16. Lockout Tags
17. Locks (Keyed the Same)
18. Ground Fault Protector (4-Plug)
19. 100 ft. Electrical Extension Cord

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20. 50 ft. Utility Rope

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Exhibit – G1

Alexandria Renew Enterprises
CONFINED SPACE ENTRY PROGRAM
EMPLOYEE OR CONTRACTOR
TRAINING ACKNOWLEDGEMENT

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_____ _____
Employee Name Date

_____ _____
Department Supervisor

Initial Session ____

(Check Appropriate Session)

Update Session ____

I have attended a training session concerning Confined Space Safety.
The session included the following:

- Purpose
- Responsibility
- Common Confined Spaces
- Identification Plan & List of Confined Spaces
- Permit System
- Gas Monitoring Equipment
- Entry Safety Equipment
- Emergency and Rescue Plans
- Training Plan

I understand that a copy of the written safety program is available for my review during working hours. I also understand that I must follow proper procedures prior, during and after each Confined Space Entry. I was given an opportunity to ask questions, make comments and recommendations and have received feedback to my satisfaction.

_____ _____
Employee Signature Date

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Exhibit – G2

Alexandria Renew Enterprises
TRAINING ACKNOWLEDGEMENT

DRAFT

EMPLOYEE NAME: _____ DATE: _____

DEPARTMENT: _____ JOB TITLE: _____

PLEASE INDICATE TYPE TRAINING ATTENDED:

INITIAL SESSION: _____ UPDATE SESSION: _____

NAME OF PROGRAM: CONFINED SPACE EMERGENCY RESCUE

I HAVE RECEIVED TRAINING ON THE FOLLOWING INFORMATION:

- Rescue Equipment Review
- Communication Equipment and Use
- Proper Utilization of Hoist; Harness and Safety Line
- Proper Utilization of Personal Protective Equipment (PPE)
- First Aid and CPR Responders
- Outside Rescue Notification Procedures

I was given an opportunity to ask questions, make comments and recommendations and have received feedback to my satisfaction.

_____ _____
EMPLOYEE SIGNATURE DATE

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Exhibit – G3

Alexandria Renew Enterprises
Confined Space Rescue Training Acknowledgement

I understand that in the event of an emergency and I am the designated monitoring attendant, I may not enter a Confined Space at any time.

I acknowledge that an employee who enters a Confined space will do so with a harness and retractable lifeline. If a retrieval is implemented the follow will apply. *In most emergencies an individual will simply be "cranked or pulled" out of the Confined Space during the rescue.*

I further understand that I may not attempt to rescue anyone from a Confined Space, for any reason, until such time there is testing for acceptable oxygen levels and atmospheres. If oxygen and atmospheric levels can not be brought into acceptable limits (through the use of forced air, etc.), I will not enter, but wait for an Emergency Paramedic unit (Fire Department) to arrive. In any case, the local Emergency Rescue unit will be alerted by dialing 911.

By signing below, I attest that I have attended a training session to discuss the above issues and have been shown how to use a winch or lifeline to retract/remove a stranded person from a Confined Space through a practice rescue drill.

Employee Name Date

Department Supervisor

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Alexandria Renew Enterprises

Confined Space Training Acknowledgement

(Admin, Management, Quality, H.R., Finance, Communications)

I acknowledge receipt and understanding of the information presented on Confined Spaces. I, unless trained and authorized, will not, for any reason, enter such an area that has been designated as a CONFINED SPACE.

I also acknowledge that failure to follow these safety guidelines will result in my discharge from employment.

Employee Name Date

Department Supervisor

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Exhibit H

DEFINITIONS
(From Section 1910.146 of Standards)

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1. Acceptable environmental conditions – confined space workplace conditions in which uncontrolled hazardous atmospheres are not present and include any additional environmental criteria the employer may require for entry into a permit required confined space.

2. Attendant – an individual stationed outside the permit required confined space who is trained as required and who monitors the authorized entrants inside the permit required confined space.

3. Authorized entrant – an employee who is authorized by the employer to enter a permit required confined space.

4. Emergency – any occurrence (including any failure of hazard control or monitoring equipment) or event(s) internal or external to the confined space, which could endanger entrants.

5. Entry – the act by which a person intentionally passes through an opening into a permit required confined space and includes work activities in that space.

6. Entrant – is considered to have entered the space as soon as any part of the entrant's body breaks the plane of an opening into the space.

7. Entry permit – the written or printed document established by the employer where the employer's hazard identification and evaluation for that confined space is contained.

8. The permit is used by the employer to authorize employees to enter that permit required confined space.

9. Entry permit system – the employer's written procedures for preparing and issuing permits.

10. Hazardous atmosphere – an atmosphere that exposes employees to a risk of death, incapacitation, injury or acute illness.

11. Immediately dangerous to life or health (IDLH) – any condition which poses an immediate threat of loss of life; may result in irreversible or immediate sever health effects; may result in eye damage; irritation of other conditions which could impair escape from the permit space.

12. In-plant rescue team – a group of tow or more employees previously designated and properly trained to perform rescues in permit spaces in the facility.

13. Non-permitted condition – a non-permit confined space is a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

14. Oxygen deficient atmosphere – atmosphere containing less than 19.5 percent oxygen by volume.

15. Oxygen enriched atmosphere – atmosphere containing more than 22 percent oxygen by volume.

16. Permit required confined space (permit space) – an enclosed space which: is large enough and arranged so that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit; is not designed for continuous employee occupancy; and contains one or more of the following:

    - Contains or has a known potential to contain hazardous atmosphere.
    - Contains a material with the potential for engulfment of an entrant.
    - Has internal design that could lead the entrant being trapped or asphyxiated by the walls or floor sloping downward to a smaller section.
    - Contains any other recognized serious safety or health hazard.

17. Permit required confined space program – the employer's program for preventing unauthorized employee entry and for ensuring safe entry into and work within permit spaces by authorized employees.

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CONFINED SPACE CHECKLIST

1) SURVEY AREA TO BE ENTERED
   - A. Identification
   - B. Check Confined Space Area Listing

2) NOTIFY OR CONSULT SUPERVISION ON ENTRY PROCEDURES
   - A. Job Site Analysis
   - B. Supervision Approval

3) SECURE EQUIPMENT NEEDED TO ENTER SPACE
   - A. Personal Protective Equipment
   - B. Gas Monitoring Equipment
   - C. All Other Equipment Per Permit if Required to Safely Enter, Work In or Exit Confined Space

4) COMPLETE CONFINED SPACE ENTRANT PERMIT REQUIREMENTS
   - A. Location
   - B. Description
   - C. Purpose of Entry
   - D. Testing as Required-Oxygen/Gas (Toxic) – Ventilation – Noise - Temperature
   - E. Personal Protective Equipment or Other Safety Equipment as Required
   - F. Lockout/Tagout
   - G. Safety Attendant
   - H. Proper Approvals – Dates - Times

5) COMPLETE PRE-TESTING/ENTRY NAMES FORM
   - A. Record All Oxygen and/or Toxic Gases
   - B. Record All Entries/Exits-Dates and Times

6) ALERT RESCUE TEAM

7) RE-CHECK GAS READINGS BEFORE ENTRY

8) COMPLETE WORK AS DESCRIBED

9) SECURE AREA
   - A. Remove All Equipment
   - B. Remove Lockout Devices and Restore Energy
   - C. Alert Any Employees Associated With Area of the Completion of Work

10) COMPLETE CONFINED SPACE ENTRY LOG AND LOCKOUT/TAGOUT LOG

RESCUE TEAM MEMBERS

1. _____ 2. _____

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3. _____ 4. _____

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Exhibit - I

ANNUAL REVIEW OF THE CONFINED SPACE ENTRY PROGRAM

All necessary equipment for Confined Space is available for monitors and safety attendant personnel and is kept in good shape.
_____ Yes _____ No

All identified confined space(s) are marked with signs on or near entrance points.
_____ Yes _____ No

Prior to employee or contractor confined space entry, a confined space permit is always secure on or near the point of entrance to the confined area.
_____ Yes _____ No

Permits are being issued for periods no longer than 8 hours.
_____ Yes _____ No

"Permit Required" space entries are being signed by authorized safety monitors and authorized supervisors before the entry occurs.
_____ Yes _____ No

Canceled Permits have been reviewed by the confined space program committee to correct any inefficiency in the confined space program or make the necessary modifications to the confines space analysis and entry permit procedures.
_____ Yes _____ No

Protective equipment, tools and safety procedures are followed for the task at hand.
_____ Yes _____ No

Gas Monitor readings for Oxygen, Combustibles(LEL), Carbon Monoxide and/or any other Toxic Gases were posted to each permit.
_____ Yes _____ No

The operation of the Gas Monitoring Equipment has been reviewed with all authorized trained employees in Confined Space Entry which includes the different gas level readings, alarms and correct procedures for taking readings without breaking the plain of the confined space.

_____ Yes _____ No

Gas Monitoring Equipment has been calibrated and in good working order.

_____ Yes _____ No

All individuals who may perform rescue functions practice confined space rescue at least once every 12 months.
_____ Yes _____ No

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At least one employee per shift maintains current certification in basic first-aid and CPR.
_____ Yes _____ No

The local rescue service (paramedics and firefighters) has been familiarized with potential hazards, which may confront them when called on to perform a rescue at our facility.
_____ Yes _____ No

All Safety Attendants are trained to recognize hazards associated with the task and in applicable rescue procedures including notification measures for obtaining assistance.
_____ Yes _____ No

Safety Attendants understand they have no other duties while stationed outside the confined space while co-worker is inside the space.
_____ Yes _____ No

Even in an emergency situation, the attendant is instructed not to enter the confined space until help arrives, and then only with the protective equipment as outlined by the permit rescue procedures.
_____ Yes _____ No

The attendant is also responsible and has authority to prevent unauthorized personnel from entering the area and can evacuate the area if needed.
_____ Yes _____ No

The Company will maintain a comprehensive Confined Space Entry Program training plan for all plant personnel and applicable third-party personnel (contractors).
_____ Yes _____ No

==========

From this review, it has been determined that the following changes, updates or revisions to the facility's Confined Space Program should be implemented as soon as possible:

No Changes ☐ Changes Required ☐

If changes are required, then explain in detail: _____

_____

_____

_____

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Committee Approval of this Review (Signatures): _____

_____

_____

_____

_____

Date: _____

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Exhibit – J

FIRE/RESCUE SQUAD ANNUAL WALK-THROUGH OF CONFINED SPACES
[Facility Name]

On _____, a representative from the local fire/rescue squad came to [Facility Name] to become more familiar with the locations and types of Confined Spaces found on premises.

_____ _____
Name/Unit of Local Fire/Rescue Squad Representative Signature

_____ _____
Company Representative Date

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Exhibit - K

CONFINED SPACE RESCUE PROCEDURES

[Facility Name]

UNCONSCIOUS VICTIM: (CALL 911 IMMEDIATELY)

If a victim is unconscious, you must call the local Rescue Squad immediately. This is done by dialing 911. If possible, pull the victim to the opening (hatch or door) by the attached lifeline. Once he/she is in the opening and without putting your head/face through the opening, lift him/her out.

After dialing 911, call for plant help*. When help arrives, monitor for oxygen deficiency and/or atmospheric/toxic gases or vapors by the use of gas monitoring sensor equipment. Also, forced air must be used to replenish fresh air. If it is not possible to retrieve the unconscious victim by lifeline or it is not safe to enter the confined space (due to unsafe atmospheres), wait for the local Rescue Squad to arrive.

CONSCIOUS VICTIM:

If the victim is conscious, you may or may not call 911. Inquire as to what problems he/she is having. If the injury is a break, cut or bruise and that person needs help getting out, you should assist if safe to do so. ~~If gases are not the problem, you may enter the confined space once additional plant help arrives~~. Provide any necessary first aid and seek medical attention if applicable.

Note: Never enter the confined space without someone taking your place as the Safety Attendant.

* Other than the flour silos, none of our confined spaces are entered on a routine basis. If an entry becomes necessary (i.e., welding in a brew tank), it is generally scheduled with numerous attendants on site to provide any needed assistance and hazards can be eliminated.

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Cranes and Hoist Program

Tab G of Safety Programs Manual

Original Document Date: 1/10/2011

Revised September 2018

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Purpose

The purpose of this program is to provide procedures and guidelines for cranes, hoists and other rigging devices used by AlexRenew employees and contractors. It is the policy of AlexRenew to maintain a safe workplace for its employees; to prevent the occurrence of injury or property damage during use of hoisting apparatus and related equipment by prescribing specific safety requirements for use of such equipment. The safety rules and guidance in this program apply to operations that involve the use, maintenance, and inspection of cranes, hoists and rigging devices, this includes; installed in or attached to buildings and vehicles or other mobile hoist or crane. Procedures will be developed, implemented, and documented in accordance with 29 CFR 1910.179, Overhead and Gantry Cranes and with 29 CFR 1910.184, Slings as promulgated by the Occupational Safety and Health Administration (OSHA).

Scope

This program applies to operators and users of overhead cranes, overhead hoists, hooks, slings, and below-the-hook lifting devices used for production, maintenance, and engineering purposes at AlexRenew. Use of cranes, hoists, and other rigging equipment for construction or for non-routine, specialized lifts is not fully addressed in this document and when such situations arise, the Safety Coordinator shall be contacted for pre-lift planning consultation.

Roles and Responsibilities

Operators

- Operate hosting equipment safely in accordance with this program and their training.
- Conduct functional tests and other required inspections prior to using hoisting apparatus and attachments.
- Not using hoisting apparatus that is tagged “Out of Service” or that fails any functional test or inspection condition.

Maintenance

- Ensure that cranes and hoists meet the design requirements.
- Coordinate load tests of cranes and hoists as required.
- Confirm that lifting devices comply with this procedure and related standards and are stamped with a serial number and load tested.
- Maintain all manuals and inspection reports for cranes and hoists in a central file for program reference.
- Issue work orders to complete and document required inspections and PM requirements.

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- Coordinate annual inspection by an outside vendor.
- Confirm that any hoisting apparatus repaired or modified by maintenance meets design and certification requirements.

Safety Coordinator

- Interpreting crane and hoist safety rules and standards.
- Periodically verifying test and inspection reports on hoisting apparatus.
- Audit and maintain training documents.

Design Requirements

The design of all commercial cranes and hoists and other lifting devices will comply with the requirements of ASME/ANSI B30 standards and OSHA standards.

All lifting hooks will have safety latches (except for certain specific-use hooks designed to not be used with a latch, such as grab hooks or hooks that can be "moused" such as hooks that attach the hoist to the crane).

Crane pendants will have an electrical disconnect switch or button to open the main-line control circuit.

Crane and hoists shall have a main electrical disconnect switch readily accessible.

Crane bridges and hoist monorails shall be labeled on both sides with the rated load capacity.

Each hoist's load block or hoist body shall be labeled with the rated load capacity.

Pendant controls will be labeled as to function and shall be legible at all times during use.

A device such as an upper-limit switch or slip clutch shall be installed on all cranes and hoists. A lower-limit switch may be required when there is insufficient hoist rope on the drum to reach the lowest point. "Insufficient hoist rope" means that less than the required two wraps of rope remaining on the drum when the hook is in its extreme low position.

Bumpers, stops, or rail sweeps shall be provided for cranes, trolleys, and bridge trucks to prevent exceeding limits of travel at their ends or striking nearby objects.

Where chains are used for overhead lifting, only alloy grade chain may be used.

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Operational Tests

Prior to initial use, new and altered cranes shall be tested to ensure compliance with OSHA and ANSI standards and must include the following functions:

1. Hoisting and lowering
2. Trolley travel
3. Bridge travel
4. Limit switches and locking and safety devices
5. Load testing

Load Testing

Newly installed or re-rated cranes or hoists, or those that have been extensively repaired or rebuilt structurally, shall be load tested at 125% of the rated capacity by designated personnel, with the load test results documented and forwarded to the Safety Coordinator.

Slings and their components shall have proof test data when purchased. It is the responsibility of the purchaser to ensure that the test data is obtained and forwarded to the Safety Coordinator.

Other lifting devices that have been subject to modification such as welding, bending, and reforming must be inspected and load tested to 125% of rated working load prior to use.

Cranes and hoists that have been overloaded shall be inspected prior to being returned to service.

Rigging suspended from a crane or hoist hook shall be load tested initially, then re-tested annually thereafter.

All mobile hoists shall be load tested at intervals to be determined by engineering or maintenance.

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Fabrication of Hoist Hooks and Lifting Devices

Lifting devices will not be fabricated internally.

If a new lifting device is to be required, engineering is responsible for obtaining all pertinent data, which will include the following information:

A mechanical drawing of the device.

Proposed location where the device is intended for use (to include asset number).

Tool and detail number of the device.

Recommended working load limit with supporting documentation, including proof test (certification).

A serial number will be assigned to the new lifting device by the Plant Engineer and will be stamped on the device when it is tested.

The device must be certified prior to being released for use. Certification documentation is to be forwarded to the Safety Department upon receipt.

Crane Classification & Inspection Requirements

Standby crane is defined by OSHA as a crane which is not in regular service but which is used occasionally or intermittently as required. The cranes at Alexrenew were evaluated and a determination made by the Safety and Maintenance Mangers that the cranes at the facility meet this definition.

Cranes and hoists that are idle (operational but not being used) do not require monthly inspections and should have a “Out of Service” tag affixed to alert potential users to inspection required once they are returned to service. If idle less than six months, then a ‘Frequent’ inspection must be performed prior to use. If idle longer than six months, then an inspection covering the items in both ‘Frequent’ and ‘Periodic’ inspections is to be performed prior to use.

Standby cranes shall be inspected at least semi-annually in accordance with ‘Frequent’ Inspections as described below.

Defective cranes and hoists will be locked and tagged “Out of Service” until defects are corrected.

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General Safety Rules

1. Only trained personnel will operate cranes and hoists.
2. Perform and document required inspection prior to use.
3. Do not engage in any practice that will divert your attention while operating the hoist.
4. Ensure that the rated load capacity for the crane, hoist, sling, or other lifting device is not exceeded. Know the weight of the object being lifted.
5. Make certain that before moving the load, that lifting devices are fully seated in the saddle of the hook.
6. Do not use the load chain as a sling and do not wrap the load chain around the load.
7. When moving a hoist with a load, avoid having your hand in a pinch point between the hoist hook and the lifting device.
8. Take up slack carefully, check the load balance, move the load a few inches, and check the load holding action before continuing.
9. Move the load by pushing or pulling on the load itself rather than using the pendant cables.
10. Keep crane hoisting ropes vertical and avoid side pulls. Side pulls can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.
11. Do not move a load over people and do not work under a suspended load unless it is supported by blocks, jacks, or other solid footing.
12. Any crane or hoist suspected of having been overloaded (exceeded its rated capacity) shall be tagged as "Out of Service" and not used until it can be inspected and load tested.
13. Do not use limit switches to stop the hoist under normal operating conditions.
14. Do not attempt to lengthen the load chain or repair damaged load chain.
15. If electric power goes off, place your controllers in the OFF position until power is restored.
16. Avoid sudden stops and starts. Shock loading can occur when a suspended load is accelerated or decelerated, and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.

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Frequent Inspections

The following items shall be inspected for defects. All deficiencies such as listed below shall be carefully examined and determination made as to whether they constitute a safety hazard:

1. Test the upper-limit switch. Raise the block to a point just below the limit-stop tripping weight. Slowly move the block up until the weight has made the normal movement required to trip the limit-stop.

   If the hoist still moves at a point where no movement should be present, stop the travel of the hoist with the controller before the block is pulled into the hoist drum or hits the upper sheave unit. The limit-switch should be considered unsafe with no further actions or use of the hoist made.

   If the limit switch operates successfully, as indicated by normal stopping of the hoist, lower the block a sufficient distance to permit a full-speed test. The block should then be hoisted at full speed into the limit-switch tripping weight, leaving the hoist controller on, until the hoist stops.

2. Visually inspect the load lines, trolley, and bridge as much as possible from the operator's station looking for damage or dislocation from proper position.

3. Test all direction and speed controls for both the bridge and trolley travel.

4. Test the pendant emergency stop (if equipped).

5. Test the hoist brake (if equipped) to verify there is no drift without a load.

6. Look for deterioration or leaks in lines or other parts of the air or hydraulic systems.

7. Verify that the hook has a safety latch and that the latch is properly working.

8. Visually inspect the hook(s) for any deformation or cracks. Deformation of a hook includes more than 15 percent excess throat opening from normal or more than 10 degrees twist from the plane of the unbent hook. Hooks displaying such defects will be discarded and shall not be repaired.

9. Visually inspect the hoist chains including end connections, for excessive wear, twist, distorted links or stretch.

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Periodic Inspections

Periodic Inspections shall meet the requirements of 29 CFR 1910.179(j) (3). Maintenance will schedule and supervise (or perform) inspections of cranes and hoists.

The following items shall be inspected for defects. All deficiencies such as listed below shall be carefully examined and determination made as to whether they constitute a safety hazard:

1. Deformed, cracked, or corroded members.
2. Loose bolts or rivets.
3. Cracked or worn sheaves and drums.
4. Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.
5. Excessive wear on brake system parts, linings, pawls, and ratchets.
6. Load, wind, and other indicators over their full range, for any significant inaccuracies.
7. Gasoline, diesel, electric, or other means for improper performance or noncompliance with applicable safety requirements.
8. Excessive wear of chain drive sprockets and excessive chain stretch.
9. Electrical apparatus, for signs of pitting or any deterioration of controller contactors, limit switches, and push button stations.

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Preventive Maintenance

Preventive maintenance on cranes and hoists will be in accordance with the manufacturers' recommendations.

Maintenance will schedule and supervise (or perform) annual preventive maintenance (PM) and inspections of cranes and hoists. The annual PM and inspection will cover:

10. Hoisting and lowering mechanisms.
11. Trolley travel, monorail travel, and bridge travel.
12. Limit switches and locking and safety devices.
13. Structural members, sheaves and drums, bolts and rivets.
14. Parts such as pins, bearings, shafts, gears, rollers, locking devices, and clamping devices.
15. Brake system parts, linings, pawls, and ratchets.
16. Load, wind, and other indicators over their full range.
17. Electrical, pneumatic, hydraulic, or mechanical power segments.
18. Chain-drive sprockets.
19. Crane and hoist hooks.
20. Electrical apparatus, for signs of pitting or any deterioration of controller contactors, limit switches, and push button stations.
21. Wire rope and hoist chains.

Documentation

If the hoist fails any of the above tests, tag it "Out of Service" and initiate maintenance on it, or if required by this procedure, discard the device.

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Inspections shall be documented for certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier of the chain which was inspected, the serial number, or other identifier, of the hook inspected, identifier for any rope which was inspected.

Moving a Load

Center the hook or other lifting device over the load to keep the cables from slipping out of the drum grooves and overlapping, and to prevent the load from swinging when it is lifted.

Plan and check the travel path to avoid personnel and obstructions.

Lift the load only high enough to clear the tallest obstruction in the path.

Start and stop slowly.

Land the load when the move is finished.

Never leave suspended loads unattended. In an emergency, where the crane or hoist has become inoperative and the load must be left suspended, barricade or post warning signs around it. Lock open and tag the crane or hoist's main electrical disconnect switch.

Parking a Crane or Hoist

Remove all slings and below-the-hook lifting devices from the hook.

Raise the hook at least 7 feet above the floor or secure it to a designated post.

Store the pendant away from aisles and work areas.

Place all controls and the emergency stop switch in the OFF position.

Open the main switch to the OFF position.

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Rigging

Do the following when rigging a load:

Determine the weight of the load.

Determine the proper size for slings and components. Refer to the Handbook of Rigging for Construction and Industrial Operations and the associated ANSI documents for guidance.

Do not use manila rope for rigging.

Make sure that shackle pins and shouldered eyebolts are installed in accordance with manufacturer's recommendations.

Make sure that ordinary (shoulderless) eyebolts are threaded inward at least 1.5 times the bolt diameter.

Use safety hoist rings (swivel eyes) as the preferred substitute for eyebolts wherever possible.

Do not use slings, eyebolts, shackles, or hooks that have been cut, welded, or brazed, or show damage such as bending or excessive wear.

Do not shorten slings with knots, bolts, or other makeshift devices and do not use slings with kinked or knotted legs.

Pad sharp edges to protect slings.

Install wire rope clips with the base (saddle) only on the live (long) end and the U-bolt only on the dead (short) end. Follow the manufacturer's recommendation for the number and spacing of clips for each specific wire size.

Determine the center of gravity and balance the load before moving it.

Initially lift the load only a few inches to test the rigging and balance.

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Overloading

Cranes or hoists shall not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded shall be removed from service by locking open and tagging the main disconnect switch. Additionally, overloaded cranes shall be inspected, repaired, load tested, and approved for use by Central Maintenance before being returned to service.

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Working at Heights

Anyone conducting maintenance or repair on cranes or hoists at heights greater than (4 ft.) shall use fall protection. Fall protection includes safety harnesses that are fitted with a lifeline and securely attached to a structural member of the crane or building, preferably from above the worker. (Contact the Safety Coordinator with any questions on fall protection needs).

Hand Signals

Signals to the operator shall be in accordance with the standard hand signals unless voice communications equipment (telephone, radio, or equivalent) is used. Signals shall be discernible or audible at all times. Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals shall be agreed upon and thoroughly understood by both the person giving the signals and the operator, and shall not be in conflict with the standard signals.

Slings

Slings can be made of alloy steel chain, synthetic webbing, wire rope, metal mesh or fiber rope.

All slings will be inspected annually by a competent person. Any defective equipment is to be removed from service and destroyed or disposed of to prevent inadvertent reuse. The working load limit capacity shall be stamped or affixed to all slings.

The following observations shall result in the sling being rejected or destroyed:

Synthetic Webbing Slings - abnormal wear, torn stitching, broken fibers, discoloration, deterioration, chemical burns, melting, or charring.

Wire-Rope Slings - kinking, crushing, bird-caging, evidence of heat damage, cracks, deformation, worn end attachments, six randomly broken wires in a single rope lay, or three broken wires in one strand of rope.

Alloy Steel Chain Slings - cracked, bent, or elongated links or components.

Metal Mesh Slings - broken welds or brazed joints, excessive reduction in wire size, distortion of handles.

Fiber Rope Slings - abnormal wear, powdered fiber between strands, broken or cut fibers, discoloration, variations in strands.

Shackles, Eyebolts, Turnbuckles - damaged or deformed.

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Alloy Steel Chain Slings

Alloy steel chain slings must have permanently affixed identification stating size, grade, rated capacity, and reach.

Only mechanical coupling links (called Hammerlocks) recommended for overhead lifting will be used to field-connect chain links to other chain links or to other attachment devices, such as master links, rings, and hooks.

Do not use mechanical coupling links or low carbon steel repair links to repair broken lengths of alloy steel chain.

Training and Qualifications

Employees will be trained on the job by the Maintenance Supervisor, or approved trainer, to properly operate and inspect a hoist in accordance with the procedures provided in this program. Training will include:

1. Review of the procedures
2. Review of pre-operational testing and inspection
3. General rules and operation for crane and hoists
4. Moving loads and parking a crane or hoist

Training will be documented and given to the Safety Coordinator to maintain. A general review of safety rules and pre-operational inspection will be performed annually by the Safety Coordinator.

Record of Amendments

Changes to this document are expected due to lessons learned, updates to protocols, and/or notification requirements. Revisions will be recorded and tracked on the table below.

Revisions	Date	Section # and Page #	Description of Change	Approved by
1				
2				
3				

4				
5				
6				

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ELECTRICAL / ARC FLASH SAFETY PROGRAM

(NFPA 70E)

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ALEXANDRIA RENEW ENTERPRISES

1. PURPOSE

The electrical safety standard operating procedures (SOPs) are intended to ensure electrical safety of qualified and authorized employees working on or near energized live parts of electrical equipment at Alexandria Renew Enterprises (AlexRenew).

2. SCOPE

This document establishes specific minimum requirements for working on or near live parts during operation and maintenance of the following electrical equipment:

1. Panelboards Rated 240 Volts and below
2. Panelboards or Switchboards Rated between 240 Volts and 600 Volts (with molded case or insulated case breakers)
3. Motor Control Centers Rated 600 Volts and below
4. Switchgear Rated 600 Volts and below (with power circuit breakers and fused switches)
5. Other 600 Volt Class Equipment (277 Volts through 600 Volts, Nominal)
6. Motor Starters (2.3kV through 7.2kV NEMA E2 fused contactors)
7. Metal Clad Switchgear (1kV and above)
8. Other Equipment Rated 1kV and above

3. DEFINITIONS

To aid AlexRenew personnel in understanding commonly used terms when discussing electrical hazards in this SOP, the following is a partial listing of definitions defined by NFPA 70E.

Accessible (as applied to equipment). Admitting close approach; not guarded by locked doors, elevation, or other effective means.

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Accessible (as applied to wiring methods). Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in by the structure or finish of the building.

Accessible, Readily (Readily Accessible). Capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, and so forth.

Ampacity. The current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

Appliance. Utilization equipment, generally other than industrial, that is normally built in standardized sizes or types and is installed or connected as a unit to perform one or more functions such as clothes washing, air conditioning, food mixing, deep frying, and so forth.

Approved. Acceptable to the authority having jurisdiction.

Arc Rating. The maximum incident energy resistance demonstrated by a material (or a layered system of materials) prior to breakopen or at the onset of a second-degree skin burn. Arc rating is normally expressed in cal/cm^2.

Authorized Employee. A qualified person performing operation, servicing, and maintenance covered in this document.

Automatic. Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current, pressure, temperature, or mechanical configuration.

Bare Hand Work. A technique of performing work on live parts, after the employee has been raised to the potential of the live part.

Barricade. A physical obstruction such as tapes, cones, or A-frame-type wood or metal structures intended to provide a warning about and to limit access to a hazardous area.

Barrier. A physical obstruction that is intended to prevent contact with equipment or live parts or to prevent unauthorized access to a work area.

Bonding (Bonded). The permanent joining of metallic parts to form an electrically conductive path that ensures electrical continuity and the capacity to conduct safely any current likely to be imposed.

Bonding Jumper. A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected.

Branch Circuit. The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s).

Cabinet. An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung.

Circuit Breaker. A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating.

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Deenergized. Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of the earth.

Device. A unit of an electrical system that is intended to carry but not utilize electric energy.

Disconnecting Means. A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.

Effective Ground-Fault Current Path. An intentionally constructed, permanent, low-impedance electrically conductive path designed and intended to carry current under ground-fault conditions from the point of a ground-fault on a wiring system to the electrical supply source.

Electric Sign. A fixed, stationary, or portable self-contained, electrically illuminated utilization equipment with words or symbols designed to convey information or attract attention.

Electrical Hazard. A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or blast.

Electrical Safety. Recognizing hazards associated with the use of electrical energy and taking precautions so that hazards do not cause injury or death.

Electrically Safe Work Condition. A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked/tagged in accordance with established standards, tested to ensure the absence of voltage, and grounded if determined necessary.

Enclosed. Surrounded by a case, housing, fence, or wall(s) that prevents persons from accidentally contacting energized parts.

Enclosure. The case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage.

Energized. Electrically connected to or having a source of voltage.

Equipment. A general term including material, fittings, devices, appliances, luminaries (fixtures), apparatus, and the like used as a part of, or in connection with, an electrical installation.

Explosion Proof Apparatus. Apparatus enclosed in a case that is capable of withstanding an explosion of a specified gas or vapor that may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited nearby.

Exposed (as applied to live parts). Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated.

Exposed (as applied to wiring methods). On or attached to the surface or behind panels designed to allow access.

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Exposed. For the purposes of this document, the word *exposed* means that the circuit is in such a position that, in case of failure of supports or insulation, contact with another circuit may result.

Externally Operable. Capable of being operated without exposing the operator to contact with live parts.

Feeder. All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent device.

Fitting. An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function.

Flame-Resistant (FR). The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source.

FPN: Flame resistance can be an inherent property of a material, or it can be imparted by a specific treatment applied to the material.

Flash Hazard. A dangerous condition associated with the release of energy caused by an electric arc.

Flash Hazard Analysis. A study investigating a worker's potential exposure to arc-flash energy, conducted for the purpose of injury prevention and the determination of safe work practices and the appropriate levels of PPE.

Flash Protection Boundary. An approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.

Flash Suit. A complete FR clothing and equipment system that covers the entire body, except for the hands and feet. This includes pants, jacket, and bee-keeper-type hood fitted with a face shield.

Fuse. An overcurrent protective device with a circuit-opening fusible part that is heated and severed by the passage of overcurrent through it.

Ground. A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.

Grounded. Connected to earth or to some conducting body that serves in place of the earth.

Grounded Conductor. A system or circuit conductor that is intentionally grounded.

Grounded, Effectively. Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages that may result in undue hazards to connected equipment or to persons.

Grounding Conductor. A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode or electrodes.

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Grounding Conductor, Equipment. The conductor used to connect the non-current-carrying metal parts of equipment, raceways and other enclosures to the system grounded conductor, the grounding electrode conductor, or both, at the service equipment or at the source of a separately derived system.

Grounding Electrode Conductor. The conductor used to connect the grounding electrode(s) to the equipment grounding conductor, to the grounded conductor, or to both, at each service, at each building or structure where supplied from a common service, or at the source of a separately derived system.

Ground Fault. An unintentional, electrically conduction connection between an ungrounded conductor of an electrical circuit and the normally non-current-carrying conductors, metallic enclosures, metallic raceways, metallic equipment, or earth.

Ground-Fault Circuit-Interrupter. A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds the values established for a Class A device.

FPN: Class A ground-fault circuit-interrupter trips when the current to ground has a value in the range of 4 mA to 6 mA. For further information, see UL 943, *Standard for Ground-Fault Circuit Interrupters.*

Ground-Fault Current Path. An electrically conductive path from the point of a ground fault on a wiring system through normally non-current-carrying conductors, equipment, or the earth to the electrical supply source.

Guarded. Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger.

Incident Energy. The amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. One of the units used to measure incident energy is calories per centimeter squared (cal/cm^2).

Insulated. Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of a current.

Isolated (as applied to location). Not readily accessible to persons unless special means for access are used.

Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by who's labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Limited Approach Boundary. An approach limit at a distance from an exposed live part within which a shock hazard exists.

Live Parts. Energized conductive components.

Motor Control Center. An assembly of one or more enclosed sections having a common power bus and principally containing motor control units.

NEC, National Electrical Code NFPA 70E. National Fire Protection Association, "Standard for Electrical Safety in the Workplace."

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Open Wiring on Insulators. An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings.

OSHA. Occupational Safety and Health Administration, U.S. Department of Labor.

Overcurrent. Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault.

Overload. Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload.

Panelboard. A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall, partition, or other support; and accessible only from the front.

PPE. Personal Protective Equipment.

Premises Wiring (System). That interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all their associated hardware, fittings, and wiring devices, both permanently and temporarily installed, that extends from the service point or source of power, such as a battery, a solar photovoltaic system, or a generator, transformer, or converter windings, to the outlet(s). Such wiring does not include wiring

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internal to appliances, luminaires (fixtures), motors, controllers, motor control centers, and similar equipment.

Prohibited Approach Boundary. An approach limit at a distance from an exposed live part within which work is considered the same as making contact with the live part.

Qualified Person. One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved.

Raceway. An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this standard. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquidtight flexible conduit, flexible metallic tubing, flexible metal conduit, electrical metallic tubing, electrical nonmetallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

Restricted Approach Boundary. An approach limit at a distance from an exposed live part within which there is an increased risk of shock, due to electrical arc over combined with inadvertent movement, for personnel working in close proximity to the live part.

Shock Hazard. A dangerous condition associated with the possible release of energy caused by contact or approach to live parts.

Switch, Isolating. A switch intended for isolating an electric circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means.

Switch, Motor Circuit. A switch rated in horsepower that is capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage.

Switchboard. A large single panel, frame, or assembly of panels on which are mounted on the face, back, or both, switches, overcurrent and other protective devices, buses, and usually instruments. Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets.

Switching Device. A device designed to close, open, or both, one or more electric circuits.

Circuit Breaker. A switching device capable of making, carrying, and interrupting currents under normal circuit conditions, and also making, carrying for a specified time, and interrupting currents under specified abnormal circuit conditions, such as those of short circuit.

Cutout. An assembly of a fuse support with either a fuseholder, fuse carrier, or disconnecting blade. The fuseholder or fuse carrier may include a conducting element (fuse link), or may act as the disconnecting blade by the inclusion of a non-fusible member.

Disconnecting (or Isolating) Switch (Disconnector, Isolator). A mechanical switching device used for isolating a circuit or equipment from a source of power.

Disconnecting Means. A device, group of devices, or other means whereby the conductors of a circuit can be disconnected from their source of supply.

Interrupter Switch. A switch capable of making, carrying, and interrupting specified currents.

Unqualified person. A person who is not a qualified person. (See qualified person)

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Voltage (of a Circuit). The greatest root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned.

Voltage, Nominal. A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120/140 volts, 480Y/277 volts, 600 volts). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

Voltage to Ground. For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

Working Near (live parts). Any activity inside a Limited Approach Boundary.

Working On (live parts). Coming in contact with live parts with the hands, feet, or other body parts, with tools, probes, or with test equipment, regardless of the personal protective equipment a person is wearing.

4. RESPONSIBILITIES

1. Management:

   It is the responsibility of AlexRenew's management to protect al AlexRenew staff. AlexRenew will require all outside contractors to comply with the requirements of the NEC, NFPA 70E, all applicable OSHA and any other state or federal safety standards, laws or requirements while working for AlexRenew. AlexRenew's Electrical Safety Standing Operation Procedures should also be used as a general guide.

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(a). Provide electrical safety related SOPs to qualified and authorized employees.

(b). Require qualified employees to receive electrical safety training, which shall include use of Personal Protective Equipment (PPE) to protect against arc flash hazards.

(c). Evaluate experience and capability of qualified workers for authorizing them to work on or near energized live parts.

(d). Evaluate the workplace to determine which live parts of the equipment are not placed in electrically safe work condition and require an energized electrical work permit, as given in Exhibit B.

2. Safety Coordinator

AlexRenew's Safety Coordinator is responsible for this program and has authority to make decisions to ensure the success of this program. Specifically, AlexRenew's Safety Coordinator will:

(a). Provide copies of the SOPs to the qualified and authorized personnel.

(b). Assist AlexRenew Management in evaluating experience of qualified personnel for authorization to work on or near energized parts.

(c). Review electrical accidents every year and revise the program as necessary.

(d). Recommend AlexRenew Management revise the program if he/she determines that the program does not incorporate federal/state safety regulations.

3. Team Leader

(a) Insures all electrical test equipment and PPE covered under this program are listed in AlexRenew's Computerized Maintenance Management System

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(CMMS) to include preventive maintenance procedures and frequencies per the manufacturer's recommendations.

(b) Insures all electrical test equipment and PPE covered under this program are inspected as per the AlexRenew CMMS.

(c) Inspects and documents the condition of PPE every year, and if found questionable, requires testing before authorizing subsequent use.

(d) Enforces electrical safety requirements in the workplace.

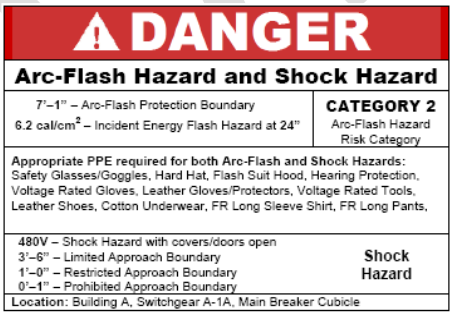
4. Employees

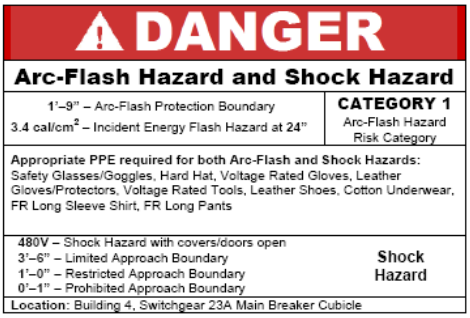
(a) Qualified and authorized employees shall use all applicable SOPs while working on or near energized live parts.

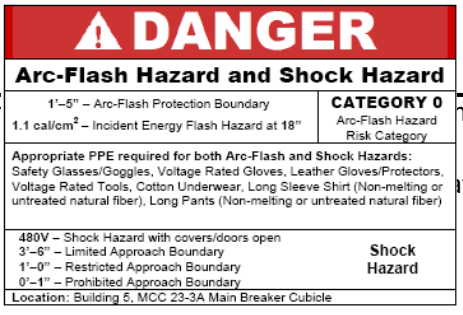
(b) Comply with instructions on the Arc Flash Hazard and Shock Hazard Label attached to equipment.

5. Identification of Arc Flash Hazards

Visible warning labels shall be placed on the equipment to warn the employees of arc flash hazards and inform them of the required PPE to protect against arc flash hazards. The warning labels shall contain a warning for each arc flash Category, similar to the one shown below:







5. APPLICATION AND COMPLIANCE

A. General Requirements

CAUTION

AlexRenew's preferred method of performing service or maintenance on or near any electrical equipment is to do so with the equipment de-energized; employing Lockout/Tagout devices in accordance with AlexRenew's established Control of Hazardous Energy (Lockout/Tagout) SOP. If de-energization is not possible, follow the instructions in this SOP.

1. Before starting each job, the employee in charge shall conduct a job briefing with the employees involved.
2. AlexRenew will require all outside contractors to comply with the requirements of the NEC, NFPA 70E, all applicable OSHA and any other state or federal safety standards, laws or requirements while working for AlexRenew.
3. Qualified and authorized employees shall be trained in methods of release of victims from contact with exposed energized live parts.
4. Qualified and authorized employees shall receive arc flash hazard training including working on or near live parts while wearing PPE appropriate to the hazard/risk category (HRC).
5. Any work performed on or near live electrical parts will require a written and approved Energized Electrical Work Permit. (See Exhibit B).

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B. Job Briefing and Planning

When an electrical task is assigned, the Team Leader and Team Electrician and all qualified staff, assigned to the job, will include in their planning discussion items identified in Exhibit A.

C. Establishing an Electrically Safe Work Condition

AlexRenew employees shall achieve an electrically safe work condition by utilizing the following process:

1. Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams, and identification tags.
2. After properly interrupting the load current, open the disconnecting device(s) for each source.
3. Wherever possible, visually verify that all blades of the disconnecting devices are fully open or that drawout-type circuit breakers are withdrawn to the fully disconnected position.
4. Apply lockout/tagout devices in accordance with the AlexRenew's documented and established Lockout/Tagout program.
5. Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are deenergized. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Before and after each test, determine that the voltage detector is operating satisfactorily.
6. Where the possibility of induced voltages or stored electrical energy (for example in capacitors, de-energized medium voltage lines, and Robicon VFD drives) exists, ground the phase conductors or circuit parts before touching them.

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7. Where it could be reasonably anticipated that the conductors or circuit parts being deenergized could contact other exposed energized conductors or circuit parts, apply ground connecting devices rated for the available fault duty.

D. Working On or Near Live Parts

1. Qualified persons shall work on or near live parts after obtaining approval of the "Energized Electrical Work Permit" given in Exhibit B.
2. Protective clothing and personal protective equipment (PPE) required for the HRC shown on the warning label affixed on the equipment, and equipment voltage rated gloves, and tools (including measurement tools), shall be utilized until work is complete and live parts are enclosed.
3. Qualified persons shall inspect and use protective clothing, PPE, and other protective equipment in accordance with the following instructions:

    (a) Protective clothing and PPE for each HRC shall be as shown in Exhibit C.
    (b) Protective clothing characteristics shall be as shown in Exhibit D.
    (c) Care and maintenance of Fire Resistant (FR) clothing and fire resistant suits:

        (i) **Inspection.** FR apparel shall be inspected before each use. Work clothing or flash suits that are contaminated, or damaged to the extent their protective qualities are impaired, shall not be used. Protective items that become contaminated with grease, oil, or flammable liquids or combustible materials shall not be used.
        (ii) **Manufacturer's Instructions**. The garment manufacturer's instructions for care and maintenance of FR apparel shall be followed.

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(d) Qualified employees shall use insulated tools (including measurement tools) and/or handling equipment when working inside the Limited Approach Boundary shown on the warning label of exposed live parts where tools or handling equipment might make accidental contact. Insulated tools shall be protected from damage to the insulating material. Insulated tools shall be rated for the voltages on which they are used.

(e) Portable ladders shall have nonconductive side rails if they are used where the employee or ladder could contact exposed live parts operating at 50 volts or more or where an electrical hazard exists.

(f) Protective shields, protective barriers, or insulating materials shall be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working on or near live parts that might be accidentally contacted or where dangerous electric heating or arcing may occur.

(g) Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about electrical hazards that may endanger themselves or nearby personnel.

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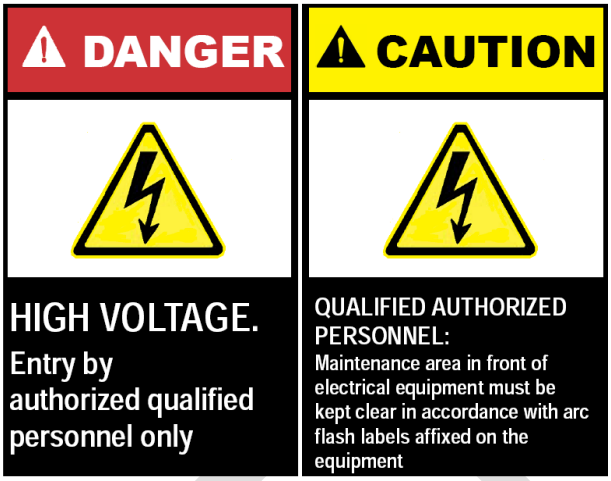

(h) Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas containing live parts. Conductive barricades shall not be used where it might cause an electrical hazard. Barricades shall be placed no closer than the Limited Approach Boundary given in warning labels affixed on the equipment.

4. Perform each of the tasks associated with the following equipment in accordance with the HRC, identified on the arc flash warning label, as given in Exhibit E.

1. Panelboards Rated 240 Volts and below
2. Panelboards or Switchboards Rated between 240 Volts and 600 Volts (with molded case or insulated case breakers)
3. Motor Control Centers Rated 600 Volts and below
4. Switchgear Rated 600 Volts and below (with power circuit breakers and fused switches)
5. Other 600 Volt Class Equipment (277 Volts through 600 Volts, Nominal)
6. Motor Starters (2.3kV through 7.2kV NEMA E2 fused contactors)

7. Metal Clad Switchgear (1kV and above)
8. Other Equipment Rated 1kV and above

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Emergency Response Plan

Original Document Date: 6/1/2005

Revised July 2018

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Emergency Phone Numbers and Contact Information 1

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Purpose

The mission of Alexandria Renew Enterprises (AlexRenew) is to produce clean, safe water and exceptional quality biosolids to the community under normal conditions as well as during an emergency and/or inclement weather events. To minimize damaging effects to the sewer collection system, wastewater treatment systems and to provide local and area assistance where and when required during and after an emergency; and to restore the, sewer collection, and sewer treatment systems to working order as quickly as possible in the event of an emergency.

The purpose of this manual is to provide a concise, updated resource that is familiar to all staff and can be easily used in case of any reasonably foreseeable emergency. This manual will help ensure proper procedures are followed to minimize the negative consequences of the event. Situations we have evaluated include medical emergencies, fires, natural disasters (earthquakes, hurricanes, floods and tornadoes) and vulnerability issues such as attacks on our infrastructure or computer systems.

Scope

This plan outlines the actions in response to possible emergency situations. It is reviewed annually and distributed to the AlexRenew Community. This plan can be found on the SharePoint website. All employees are trained and have a basic understanding of this plan. For the purposes of this plan an emergency is defined as an incident that has the potential to disrupt the normal operation and/or activities. Regulatory requirements incorporated into this plan include reporting requirements to Department of Environmental Quality and Virginia Occupational Safety and Health Program.

It should be recognized that it is impossible to completely cover the full range of possible crisis situations. A good measure of common sense and calm, considered response is required in all situations, especially those which may not be specially referenced here.

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Emergency Response Team

The team is comprised of AlexRenew employees who are responsible for coordination and implementation of the emergency response plan. The emergency team will work together to determine the severity of the emergency. The listed employees or their appointed designee are members of the team.

Team	Member Name
Trained – Evacuation Chair	Bill Rodriguez
	Larry Cable
	Darel Stevens
	Angelo Franco
	Sarah Clark
	Security Officers
Evacuation Monitor – 1st floor	Chantel
Evacuation Monitor – 2nd	Ada Robinson
Evacuation Monitor – 3rd	Raschel Davis
Evacuation Monitor – 4th	Lauren Murphy

Monitoring and Activation

The Emergency Team will meet during normal business hours if severe weather is forecast or a possible threat is considered within the next 24-48 hours. The team will be briefed on the details of the event, review the status of emergency checklist procedures and discuss departmental action should the predicted weather or emergency occur. These personnel will be on 'standby' and available by phone during the time preceding the predicted event. In the event of possible inclement weather, the Safety Coordinator will send periodic forecast updates via email to team members. The night Shift Leader will monitor weather conditions and forecasts throughout the night. Should inclement weather occur the Shift Leader will notify the Director of Production who will then communicate to the other team members.

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In an emergency there may be circumstances that require senior leadership to suspend normal operations and require only designated emergency personnel to report into work as part of an Emergency Operation Cell. The authority for implementing an emergency response decision rests with the Incident Commander. The Chief of Production or his designee will assume this position. Should he be unavailable, the progression of decision-making will be determined between the Director of Production and Director of Sustainability based upon the circumstances.

Roles and Responsibilities

The ERP is structured to comply with the Incident Command System (ICS) which is part of the National Incident Management system (NIMS). The ICS is a standardized on-scene incident management system that is the combination of facilities, equipment, personnel, procedures and communications operating within a common organizational structure designed to aid in domestic incident management activities. The ICS divides an emergency response into five manageable functions: Command, Operations, Planning, Logistics and Finance and Administration. The following is a list of staffing for the Emergency Response Team.

Incident Commander:

The Incident Commander is responsible for all aspects of the response and management of the incident. These responsibilities include by not limited to:

a. Establishing immediate priorities to stabilize the incident and ensure the safety of responders, bystanders and people involved in the incident.
b. Determine incident objective and strategy.
c. Establish and monitor incident organization.
d. Authorize an Incident Action Plan.
e. Establishing an Incident Command Post at the site in coordination with the local Fire & Rescue Station and Police Department, to coordinate emergency planning, communication and operations during the emergency.
f. Establish staging areas when needed.
g. Designate evacuation routes, assembly areas, and an area of rescue/refuge, and ensure the information is communicated to employees.
h. Communicating with management and staff on information about the incident.
i. Prepare an After-Action Report.

Deputy Incident Commander

The Deputy Incident Commander serves as the principal assistant to the Incident Commander. Responsible duties include:

a. Acting in the absence of the Incident Commander

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b. Coordinating personnel accountability reports with the Operation Section Leaders.
c. Coordinating the safe evacuation of persons requiring assistance or notifying Fire and Rescue as to the locations of people with disabilities needing assistance with evacuation.
d. Establishing alternate designated reporting areas or evacuation routes upon request from the Sector Leader.
e. Maintaining liaison with the Security force.
f. Coordinating with Alexrenew staff to ensure that visitors are accounted for on-site and directing them to designated reporting areas.
g. Assisting in providing logistic support.

Liaison Officer

When an incident requires the involvement of Fire and Rescue, or Police, the Liaison Officer is the point of contact for other agencies. Responsibilities of the Liaison Officer include:

a. Establishing and maintaining communication with agencies managing the incident.
b. Provide support to the agencies to aid in managing the incident.
c. Monitoring the status of the incident.
d. Communicating and coordinating with the Incident Commander on information about the incident.

Information Officer

The Information Officer is responsible for developing and releasing information concerning the incident to the new media, public, Alexrenew staff and other appropriate agencies and organizations.

Operation Sector Chief

The Operations Sector Chief is responsible for their respective team personnel accountability and operational aspects. The Operation Sector Chief is also responsible for directing the logistic support by providing resources to minimize environmental impact and process upset.

Operation Sector Leader

The Operation Sector Leaders are responsible for:

a) Assuring that all personnel have reported to their designated reporting area and reporting the personnel accountability to the Deputy.
b) Providing logistic support of resources to minimize safety hazards, environmental impacts and process upsets.
c) Ensure that the designated reporting areas are safe for employees.
d) Prepare After-Action Reports as required.

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Incident Command Post

Primary Location – Building G1 room 205 has been designated as AlexRenew's primary Incident Command Post.

Secondary Location – In the event the primary location is not a safe location the command Center will be moved to Building J room 104.

Other Locations – At times it may be necessary to locate near or collocate with other agencies in other locations depending on the incident and response needs. The Incident Commander will determine the location and disseminate this to other ERT members.

Communication and Notifications

A Crisis Communications Guide was compiled by the Communications Department to help AlexRenew prepare for and efficiently communicate during times of heightened scrutiny and amid quickly developing events. While a so-called crisis can take many forms, the internal plans and protocols that must be observed during such occasions require high levels of consistency and conformity. The guide is designed to serve as a means for preparing for the eventuality of a crisis as well as to provide the tools and procedures to be carried out as events unfold. For further information, refer to the Crisis Communication Guide provided as Appendix 2.

Damage Assessments

Damage assessments are used to determine the extent of damage, estimate repair or replacement costs, and identify the resources needed to return the damaged system to full operation. This assessment is accomplished during the emergency response phase of the evet, before the recovery phase is implemented.

The Incident Commander will coordinate with the Directors to begin damage assessments. The Directors will establish a Damage Assessment Team (DAT). The DAT will consist of operations and maintenance personnel with representatives from safety, engineering and procurement. Team composition may vary, however, depending upon the nature and extent of the emergency. Each Maintenance Team Planner/Scheduler who has affected facilities or equipment will open work orders indicating repairs due to the emergency.

Damage assessment procedures should follow the guidelines established for system start up and operability checks. At a minimum, the damage assessment team will complete the following activities:

- Conduct an initial analysis of the extent of damage to the system or facility.

- Estimate the repairs required to restore the system or facility; the estimate should consider supplies, equipment, rental of specialized equipment and additional staffing needs.
- Provide the list of repairs to the procurement representative so a cost estimate to conduct the repairs can be developed.

Security and access control

Are we on a list allowing employees to have access to get to work? Who do we coordinate with? State and local authorities.

Vulnerability Assessments

Vulnerability Assessments are a good way to determine what types of security measures meet each wastewater system's needs. Vulnerabilities may consist of flaws in security procedures, software, internal system controls, transmission of data, or the lack of back up or redundancy for critical parts of the wastewater system. Vulnerabilities are also weaknesses that can cause disruption or failure of the wastewater system due to human actions or natural disasters. A Vulnerability Assessment helps identify:

- General security measures to take throughout the wastewater treatment plant and collection system.
- More specialized security measures to take to protect the critical parts of the wastewater system that are essential to maintain operation.
- Administrative actions to protect staff, important documents, and information.

Recording and Reporting

An After Action Report (AAR) is consolidation of information gathered following an emergency or exercise. Information gathered from the process, identifies and guides future improvement actions in the Improvement Plan. A template to be used is provided in Attachment 3.

Regulatory Reporting and Notification Requirements
In the event of a spill

Training, Drills and Tabletop exercises

Mutual aid agreements

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Record of Amendments

Changes to this document are expected due to lessons learned, updates to protocols, and/or notification requirements. Revisions will be recorded and tracked on the table below.

Revisions	Date	Section # and Page #	Description of Change	Approved by
1				
2				
3				
4				
5				
6				

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AED Information

Locations

Inspections

First Aid Supplies

Locations

Maintenance

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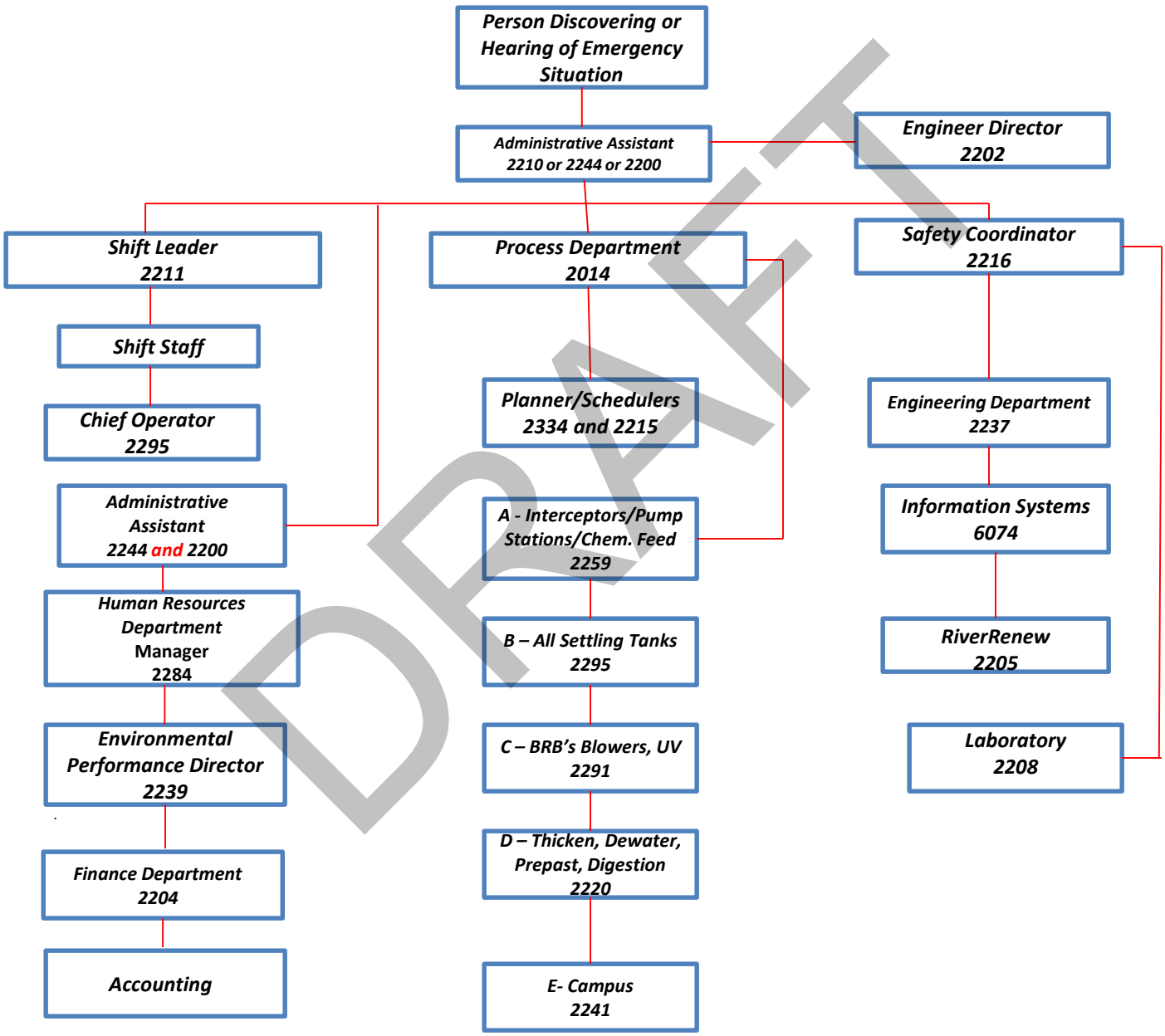
Alexandria Renew Enterprises
Emergency Contact List

Notes:

1. If the person you are designated to call does not answer call the next person on your list.
2. Each team/shift or department is responsible to notify their staff



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Emergency Phone Numbers and Contact Names

Ambulance 9-911
Fire ..... 9-911 Non-emergencies ..... (703) 548-6000
Police ..... 9-911 Non-emergencies ..... (703) 838-4444

Alban Tractor Co., Inc .... For Pump Station Generators Maintenance
Washington Blvd. 6455
Elkridge, MD 21227 Phone: (410) 796-8000 Fax: (410) 379-0911

Agility Recovery Solutions

Member Services ..... (877) 364-9393
If after 5p.m. (EST), dial "1" to contact Agility team member or call an alternative hotline number, (888) 242-3740 or (866) 894-3336.

Specify (Alert or Declaration)

- Alert – notifies Agility of a potential declaration, e.g., a server failed or severe storm is predicted. (not required, but allows for early preparation)
- Declaration – initiates an Agility response and we will begin mobilizing your recovery.

Alexandria City Police: To report a suspicious situation call: (703) 746-4444
AlexRenew liaison: Al Tierney ..... (703) 519-3448

Alexandria Health Department ..... (703) 746-4996
Rachel Stradling: 24 Hr. Line: (703) 795-8506
Cell ..... (571) 259-8548
Zvi Gruenspecht: Emergency Planner ..... (703) 746-4977
Cell ..... (703) 856-7019

Alexandria City Emergency Operations Center (EOC)
Establish contact with the City Emergency Operations Center (EOC) once it is activated. The EOC is located at the Lee Center.
Phone numbers (703) 548-6257 and (703) 836-0994 Fax: (703) 548-6952

Alexandria Transportation & Environmental Services
Yon Lambert: Phone ..... (703) 746-4081
Cell ..... (571) 746-4081
Environmental Quality: ... (703) 746-4065
Public Works: ..... (703) 746-4357
Transportation: ..... (703) 746-4747

AlexRenew Incident Command Post .....(703) 519-3381 ext. 2231

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Alex Renew on call Maintenance Representative ..... (703) 519-3381 ext. 2017

Chemical Suppliers: See Loss of Chemical Suppliers Section.

ChemTree ..... (800) 262-8200

Crisis Intervention/Grief Counseling

ComPsych Guidance Resources Program
Phone: 866.301.9552
Online: guidanceresources.com
WebID: EAPWFIS

DEQ

Issues at the plant (overflows, usual discharges, bypasses:
Mark Evan, Environmental Specialist/Water Compliance inspector for Alexandria.
Phone ..... (703) 583-3811 Email: mark.evans@DEQ.virginia.com

FBI

Chemical/Biological and Weapons of Mass Destruction (WMD)
Switch Board ..... (202) 278-2000 (Equivalent to 911)
They will be able to find who you need based on your explanation of the situation.

Gate & Building Security and Security Cameras

Jeff Stroh, Senior Account Manager/Integrated Systems/East Region
Phone: (301) 623-3186 Mobile: (443) 413-0960 Fax: (866) 900-3883
12301 Kiln Court, Ste. A
Beltsville, MD 20705

Baldino's Lock & Key, Inc. Phone: (703) 550-0770 Fax: (703) 550-8800

National Capital Region Water and Wastewater Response Network (NCR WARN)
http://www.ncrwarn.org/
Steven Bieber ..... (202) 962-3219 Email: sbieber@mwcog.org
Member contact names are located in the locker in the Incident Command Post

National Response Center ..... (800) 424-8802 (or) (202)267-2675

Nurse Triage (NT-24) ..... (877) 234-0898
To report an accident with injuries for Workers Compensation.

OSHA

Phone: ..... (703) 392-0900
After hours call Duty Office .. (540) 372-5310

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Plantation Pipeline:

Jet fuel pipes that run from Newington Tank Farm to Washington Regan National Airport along the CSX rail track right of way.
Newington Office ..... (703) 541-8102
Atlanta Office ..... (800) 510-5678

Thyssen General Elevator ..... (571) 642-0530

U.S. Park Police ..... (202) 610-7500

VA Department of Emergency Management

Headquarters
10501 Trade Court
Richmond, VA 23236
Phone: ..... (804) 897-6500 Fax: (804) 897-6506

AlexRenew is in Region 7
13901 Crown Court
Woodbridge, VA 22193

Hazardous Materials Officer: Northern VA
Joseph Taylor ..... (804) 332-3463 Cell: (703) 856-1635

VA Fairfax State Police ..... (703) 803-2660

VA Power: Acct# 1731608288

Emergency ..... (703) 581-2929
Online Outage Map: www.dom.com
Click on News/Storm Center/Outage Map

Dominion Virginia Power
171 Elden Street
2nd Floor
Herndon, VA 20170
Dale Bowman ..... (571-203-5156 Cell: (703) 201-6408
Dale.bowman@dom.com

VA Water

Phone: ..... (703) 549-7080
Barry Suits ..... (703) 706-3864

VA Water and Wastwater Response Network

Chair: Patrick Lewis Cell: (618) 578-9960
Patrick.w.lewis@gmail.com

Vector Fire Technology Inc.

For Building M "Foam Fire Suppression System"
Fay Purvis ..... (610) 466-1717 Cell: (610) 662-3055
Steve Kirrnam ..... (484) 432-3859

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Washington Gas
Phone: ..... (703) 750-1000
Jim White ..... (703) 750-5699

Weather Forecast..... (703) 260-0305/0306/0307/0405/0505

CITY OF ALEXANDRIA AND FAIRFAX COUNTY

Fairfax County	Line Maintenance 24 hrs.	(703) 323-1211
City of Alexandria		
Derek Claytor City Sewer Superintendent		(703) 746-4693
Terry Stanley Assistant Superintendent		(703) 746-4124
Jon Lambert Director		(703) 746-4025
Herbert Holmes Superintendent, T&ES Street Cleaning		(703) 746-4129
After Hours Answering Service		(703) 746-4357

OTHER OUTSIDE TELEPHONE NUMBERS

Airgas East (Deliveries) ..... (866) 718-0685
Cascade Water Service ..... (202) 327-0638
Fannon Oil (Diesel) ..... (703) 549-5700
INOVA Alexandria Hospital Emergency Room ..... (703) 504-3000
Landfill ..... (703) 690-1703
Poison Center ..... (703) 379-3070
Synagro ..... (410) 224-0022
Yellow Cab ..... (703) 549-2500

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SOP Title: Biosolids Emergency Response	**Current Revision Date:**
Purpose: This SOP is to begin the response to biosolids-related emergencies that occur on the plant. This SOP should be used by Shift and Team Leaders or their fill-in. The Quality Manager should be notified as soon as possible of all biosolids-related emergencies.	
Steps	**Remarks**
1) Determine the exact nature of the biosolids emergency. Quickly gather as much information as possible.	In cases of serious injury, fire, or explosion initiate the Incident Command Structure.
2) If a biosolids spill has occurred on the plant, determine the storm water drainage areas that the spill will impact.	Refer to the storm water pollution prevention plan for specific information on drainage areas.
3) If an onsite spill has occurred in a storm water drainage area that discharges to surface waters, begin immediate containment measures to prevent an unauthorized discharge. (Refer to the SOP on Spill Containment and Cleanup.	Unauthorized discharges are violations of the storm water discharge permit. Regulatory notice is required for these events.
4) If an onsite spill has occurred in storm water area that discharge to the plant headwork. Immediate step to contain these spills may not be necessary. However, clean-up activities should begin immediately.	Spills wholly contained in these area can be addresses without storm water permit concerns
5) In cases of other major biosolids emergencies (i.e. disruption to solids processing, catastrophic equipment failure or the loss of contractor services, the Solids Processing Team Leader and or the Prepast-Digestion Team Leaders should also be notified of the event.	Generally, in emergency situation, the Quality Manager will make the necessary notification.
6) An Incident Report (IR) should be completed and distributed per the IR&R policy.	All major abnormal events should generally be documented in an IR.

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SOP Title: Spill Containment and Cleanup	**Current Revision Date:**
Purpose: This procedure should be employed - in combination with the Emergency Response procedure - if a biosolids spill occurs on the plant site.	
Steps	**Remarks**
1) Perform the initial notifications to the Quality Manger, Chief Operator and Shift Leader. The D Team Lead should be notified if a major spill occurs in Bldg. L	Notification to the Quality Manager and the Chief Operator is must be made. If an equipment operator is onsite than a call-in for this assignment may not be required.
2) Verify the destination of storm water in the areas that the spill occurs. Employ runoff containment measures if spill could reach surface waters or other offsite locations.	Runoff in areas that return to the plant headwork may not require containment measures. However, cleanup is required
3) Access the Spill Containment Kit that located in Bldg. "L" Thickening Centrifuge Room.	This equipment should be used to contain and clean spill areas.
4) Complete measures to contain runoff from spill area if required. If possible, obtain photos of spill and remedial actions and include in the Incident Response Report.	Sufficient equipment should be found in the Spill Kit to prevent an authorized storm water discharge.
5) Estimate volume of spilled material to identify a suitable container (dump truck, trailer, or dumpster) for disposal.	The hauler may be instructed to provide equipment for this step.
6) Utilize the John Deere and necessary personnel to transfer **all** spilled material into a suitable container.	The transfer of the material may require manual labor in addition to the tractor. Call-ins may be needed in some cases in order to maintain plant operations.
7) The Quality Manager will provide guidance on the disposition of the spilled material.	The management of spill material will be evaluated on a case by case basis.
8) After removal of all loose material, the area of the spill should be thoroughly washed down and deodorized.	It is essential to minimize the potential for odors or vector attraction.
9) Ensure that the details of the spill are captured and recorded.	Interview all involved staff including contractor personnel to determine the facts. The EPC can assist with this task.
10) An Incident Report (IR) should be completed and distributed per the IR&R policy.	All major abnormal events should generally be documented in an IR.

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Chemical Emergency

First Aid for Process Chemicals

Alum

Inhalation:	(mist or spray) Remove from exposure; seek medical treatment if any symptoms occur.
Eye Contact:	Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention.
Skin Contact:	Remove contaminated clothing and wash contaminated skin with water.
Ingestion:	**Do not induce vomiting**, drink milk or water and immediately seek medical attention.

After first aid, get appropriate medical support.

Ferric Chloride

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, have trained personnel give oxygen. Call a physician.
Eye Contact:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Skin Contact:	In case of contact, immediately wash skin with soap and plenty of water. Wash contaminated clothing before reuse.
Ingestion:	If swallowed, **do not induce vomiting**. Give large quantities of water. Call a physician immediately. Never give anything by mouth to an unconscious person.

After first aid, get appropriate medical support.

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Methanol

Inhalation:	Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.
Eye Contact:	Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.
Skin Contact:	Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.
Ingestion:	Get medical attention immediately.

After first aid, get appropriate medical support.

Polymer

Inhalation:	Move to fresh air.
Eye Contact:	Rinse thoroughly with plenty of water, also under the eyelids. In case of persistent eye irritation, consult a physician.
Skin Contact:	Wash with water and soap as a precaution.
Ingestion:	The product is not considered toxic based on studies on laboratory animals.

After first aid, get appropriate medical support.

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Sodium Hydroxide (Caustic Soda)

Inhalation: Immediately remove to fresh air. Call a physician immediately.

Eye Contact: Wash eyes immediately and continuously with flowing water for 30 minutes while holding eyelids open and rolling eyes back and forth. Call a physician immediately. Continue washing until the physician advises to stop. Do not use soap or attempt to neutralize with chemicals. You may have 10 seconds or less to avoid serious permanent injury.

Skin Contact: Immediately shower with large amounts of water for 30 minutes. Call a physician immediately. Remove clothing while showering. Remove chemical goggles last to keep material from washing into eyes. Do not apply oils or lotion. Keep victim warm.

Ingestion: Immediately have victim drink plenty of water or milk. **Do not induce vomiting**. Call a physician immediately. Transport to a medical facility.

After first aid, get appropriate medical support.

Sodium Hypochlorite

Inhalation: Remove to fresh air. If breathing is difficult have trained person administer oxygen. If respiration stops, give month-to-mouth resuscitation. Get immediate medical attention.

Eye Contact: Objective is to flush material out immediately and then seek medical attention. Immediately flush eyes with a direct steam of water for at least 15 minutes while forcibly holding eyelids apart to insure complete irrigation of all eye and lid tissue. Washing eyes within one (1) minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

Skin Contact: Seek medical attention immediately. Flush thoroughly with cool water under shower while removing contaminated clothing and shoes. Continue to flush until medical attention arrives. Discard non-rubber shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious Person. If swallowed, **do not induce vomiting**. Give large quantities of milk or gelatin solution. If these are not available, give large quantities of water. If vomiting occurs spontaneously, keep airway clear and give more milk, gelatin solution or water. Get medical attention immediately. Avoid vomiting.

After first aid, get appropriate medical support.

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Sulfuric Acid

Inhalation: If vapors mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contaminated areas to avoid exposure to rescuers. If shortness of breath occurs, evaluate the possibility of bronchitis or pneumonias. Chest x-ray and arterial blood gasses can be used to determined presence of pulmonary edema. In server cause, use of humidified oxygen and assisted ventilation including positive end expiratory pressure (PEEP) may be needed. Parental steroids may be useful in limiting the extent of pulmonary damage.

Eye Contact: If this product enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

Skin Contact: If the product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention.

Ingestion: If this product is swallowed, call physician or poison control center @ 1-800-222-1222 for the most current information. If professional advice is not available, **do not induce vomiting**. Victim should rinse mouth with large amounts of water. Victim should drink 2-3 glasses of water to dilute the ingested material. Never induce vomiting or give dilutes (water) to someone who is unconscious, having convulsions, or cannot swallow.

After first aid, get appropriate medical support.

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Chemical Spill Cleanup

1. Contact the Shift Leader who will make additional calls as necessary.
2. It may be necessary to activate the Incident Command System based on the magnitude of the spill. Contact the Safety Coordinator at once if his assistance is needed.
3. See Medical Emergency section if there are injuries requiring medical attention beyond first aid.

Chemical	Personal Protective Equipment	Neutralizing Agent
Alum	Long sleeve shirt, pants, chemical gloves and boots. **Do not wear contact lenses.**	Water, Lime or soda ash
Ferric Chloride	Face shield and chemical goggles, rubber gloves, apron, and boots, rain hood, pants and jacket.	Lime or soda ash Flush with plenty of water to the head works
Methanol	Face shield and chemical goggles, rubber gloves, apron, and boots, rain hood, pants and jacket.	**Large or uncontrollable spills**: Call 9-911 **Small controllable spills** Shut off ignition sources. Stop the leak if you can do so without risk. Water spray will reduce vapors. Use absorbent material. Take up and place into container for disposal
Polymer	Dust safety masks, rubber gloves, and safety glasses. **Do not wear contact lenses.**	Scoop or vacuum up powdered material. Use Non-ammoniated polymer solvent or ice melt on liquid polymer
Sodium Hydroxide (Caustic Soda)	Face shield and chemical goggles, rubber gloves, apron, boots, rain hood, pants and jacket.	Absorbent material
Sodium Hypochlorite	Respirator, face shield and chemical goggles, rubber gloves, apron, boots, rain hood, pants and jacket.	Water
Sulfuric Acid	Respirator, face shield and chemical goggles, rubber gloves, apron, boots, rain hood, pants and jacket.	Lime or soda ash

Note: Where respirators are listed they are recommended as a precautionary measure where airborne contaminants may be present.

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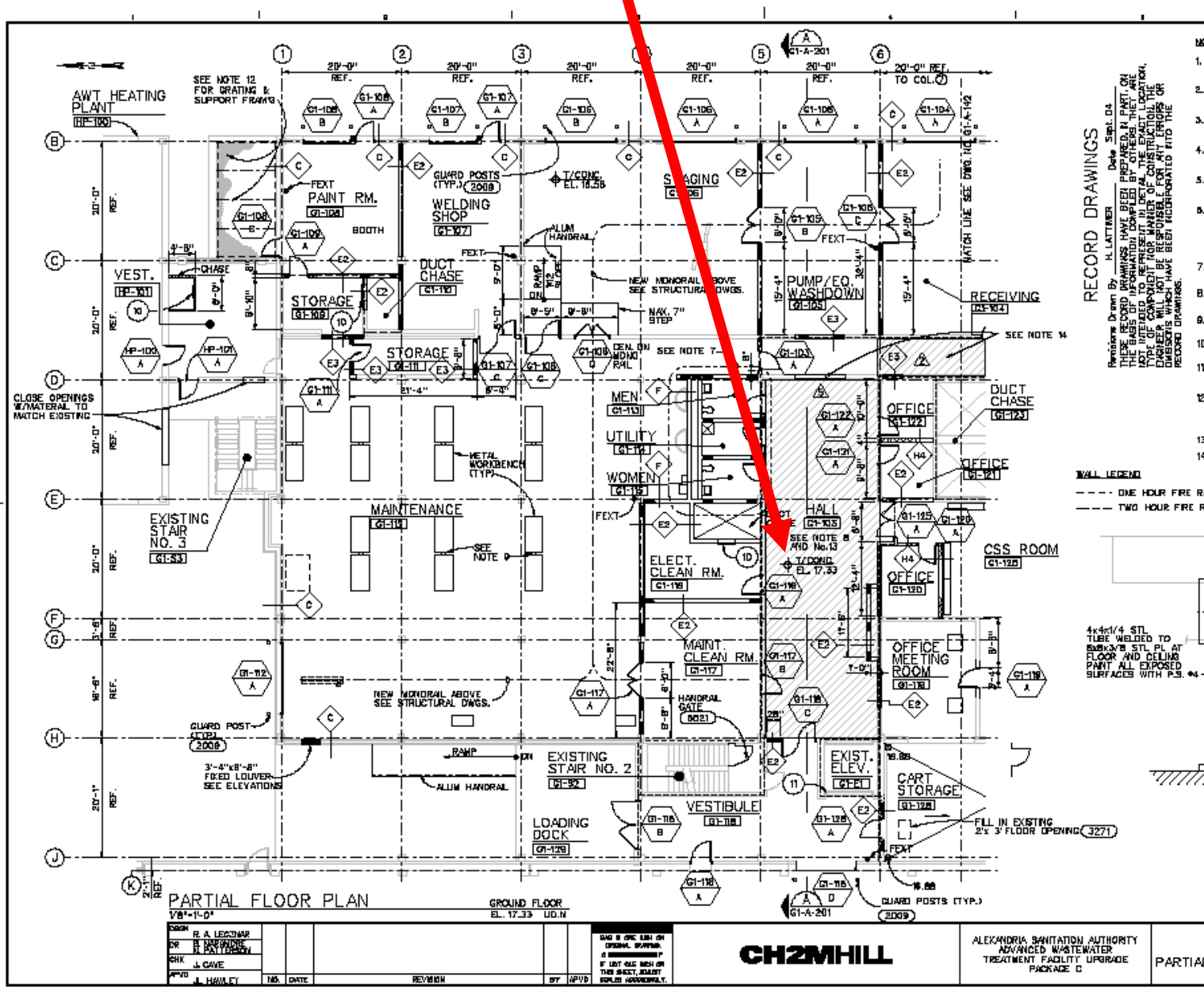
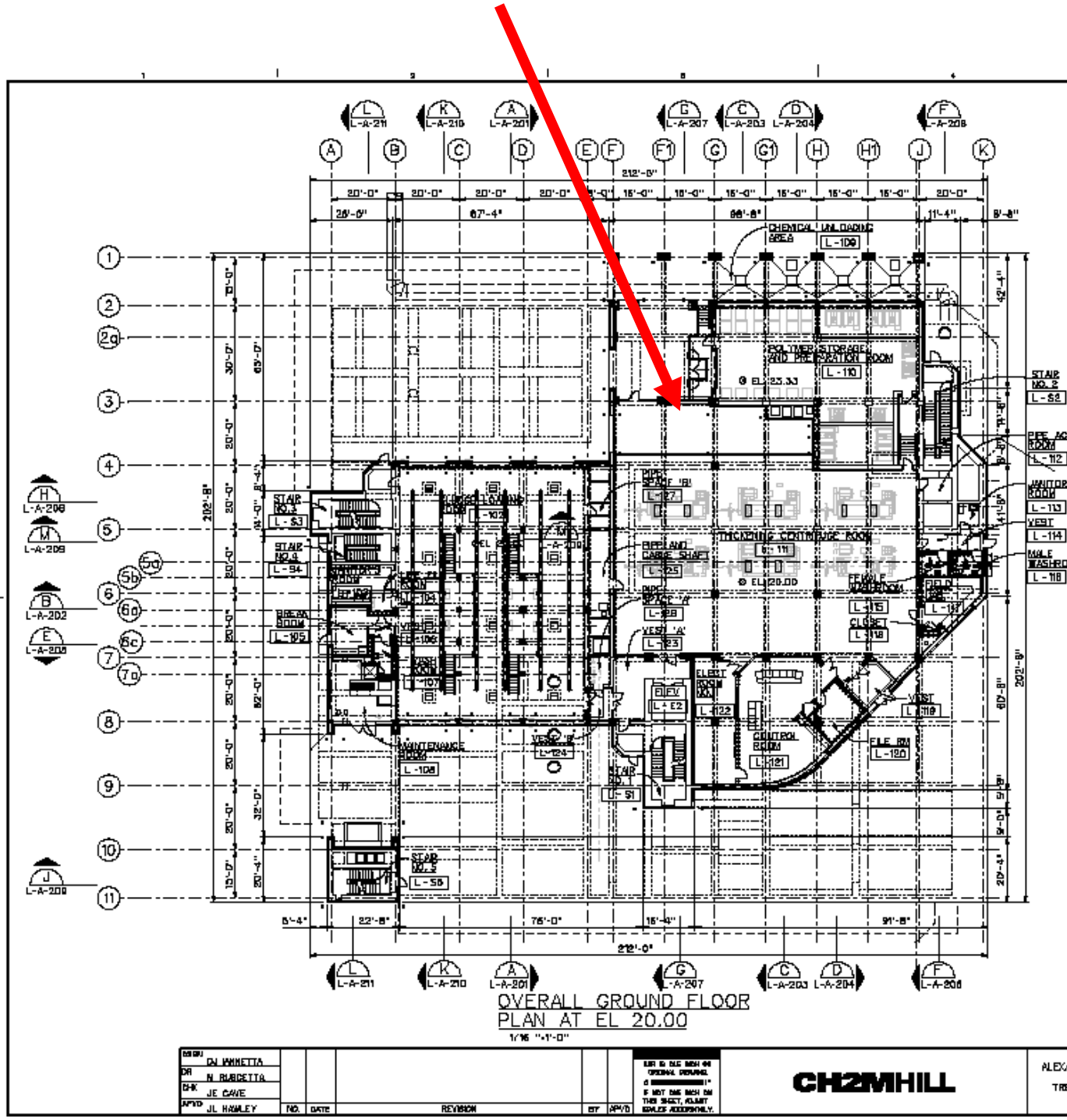
Building G-1 Spill Response Cabinet Location



Building G-1 Spill Response Cabinet

Building L Spill Response Cabinet Location



Building L Spill Response Cabinet

Emergency Spill Response Cabinet Contents

(Minimum Storage Levels)

Item	Quantity	Use
Socks (Booms) 3”x46”	2 Cases	Used for chemical or petroleum
Socks (Booms) 3”x10”	1 Case	Used for chemical or petroleum
Pillows 18"x24"	1 Case	Used for chemical or petroleum
42”x42” Drain covers	2	Cover and seal manholes or storm drains
Environmentally safe absorbent	4 Bags	Used for petroleum spills
Lime	6 Bags	Neutralize Chemicals
Large plastic “D” handle shovels	2	
Brooms	2	
Rain gear	4 Sets	Personal Protective Equipment
Rubber boots	4 Pair	Personal Protective Equipment
Hard hats with face shields	4	Personal Protective Equipment
Chemical goggles	4 sets	Personal Protective Equipment
Rubber gloves	4 pair	Personal Protective Equipment
Large mixing tubs	4	Place used socks and pillows in the tubs prior to disposal. They may also be used for other tasks during clean up.

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What to Do During and after an Earthquake

Stay as safe as possible during an earthquake. Be aware that some earthquakes are actually foreshocks and a larger earthquake might occur shortly afterwards. Minimize your movements to a few steps to a nearby safe place and if you are indoors, stay there until the shaking has stopped and you are sure exiting is safe.

If Indoors

- Drop to the ground; take cover by getting under a sturdy table or other piece of furniture; and brace yourself until the shaking stops. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building. Most staff will need to exit their office due to the amount of glass and take refuge in the inner hallways.
- Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.
- Maintenance shops and stock rooms are not good locations to be at due to the amount of tools and equipment stored that can fall and injure you.
- Use a doorway for shelter only if it is in close proximity to you and if you know it is a strongly supported, load bearing doorway.
- Stay inside until the shaking stops and it is safe to go outside.
- Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on.
- DO NOT use the elevators.
- When the shacking has stopped move to the closest Assembly Area. Assembly areas are located at both S. Payne St. and the Eisenhower Ave. electric drive through gates.

If Outdoors

- Stay there.
- Move away from buildings, the large stack at the Fire Department Burn Building, streetlights, and utility wires.
- Once in the open, stay there until the shaking stops.
- When the shacking has stopped move to the closest Assembly Area. Assembly areas are located at both S. Payne St. and the Eisenhower Ave. electric drive through gates.

If in a Moving Vehicle

- Stop as quickly as safety permits and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses, and utility wires.
- If away from the Main Plant call your supervisor for accountability.
- Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that might have been damaged by the earthquake.
- When the shacking has stopped move to the closest Assembly Area. Assembly areas are located at both S. Payne St. and the Eisenhower Ave. electric drive through gates.

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If Trapped Under Debris

- Do not light a match.
- Do not move about or kick up dust.
- Cover your mouth with a handkerchief or clothing.
- Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available. Shout only as a last resort. Shouting can cause you to inhale dangerous amounts of dust.

What to Do After an Earthquake

- When the shacking has stopped move to the closest Assembly Area. Assembly areas are located at both S. Payne St. and the Eisenhower Ave. electric drive through gates.
- Expect aftershocks. These secondary shockwaves are usually less violent than the main quake but can be strong enough to do additional damage to weakened structures and can occur in the first hours, days, weeks, or even months after the quake.
- Listen to a battery-operated radio or television. Listen for the latest emergency information.
- Use the telephone only for emergency calls.
- Open cabinets, gang boxes, wall lockers and other storage areas cautiously. Beware of objects that can fall off shelves.
- Stay away from damaged areas. Stay away unless your assistance has been specifically requested by police, fire, or relief organizations or and AlexRenew staff in a leadership position.
- Help injured or trapped persons. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
- Maintenance Team Leaders will organize Inspection Teams to inspect their respective areas. Use the inspection sheets at the end of this EAP.
- Clean up spilled chemicals immediately. Leave the area if you smell gas or fumes from other chemicals.
- Inspection Prioritization.
    - Check for gas leaks. If you smell gas quickly notify others in the building and evacuate the building. Turn off the gas at the outside main valve if you can or contact the Process Maintenance Team assigned to that area. Call the Fire Department and the gas company from a different building.
    - Check for chemical leaks.
        - Methanol: Call the Fire Department and the Shift Leader.
        - Other chemicals: Contact the Shift Leader. Instructions for chemical leaks and cleanup are listed in the Chemical Emergency Section.
    - Look for electrical system damage. Call an electrician first for advice if you see sparks or broken or frayed wires, or if you smell hot insulation.

- Check pipe/tank damage/leakage. Contact the Shift Leader if you suspect other substances are leaking from any pipe/tank.

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Evacuation Plan

Evacuation may be required if there is an explosion, fire in a building or other hazard. Evacuation route maps are posted in each work area. The maps identify exits, primary and secondary evacuation routes, locations of fire extinguishers, fire alarm pull station locations, and assembly points.

Notification Procedures

In the event of an emergency, visual and audible alarms will activate. A programmed recording instructs occupants to evacuate the building. Notification to employees can be done using one of two systems. (1) The fire alarm can be activated by using an alarm pull station or (2) the employee notification system can be utilized. The employee notification system can send out a pre-recorded message or the speaker can be used to issue a custom message. In the event that a specific message needs to be conveyed (i.e. secondary assembly point) the employee notification system will override the alarm system. If the fire alarm system is activated a signal will be sent to Simplex (alarm monitoring company). Simplex will directly notify the fire department with the information provided.

Call 9-911 to report the emergency. Give the type of emergency and the plant address and building.

Plant Address and Building Name: 1800 Limerick Street Building J

Contact the Shift Leader and advise him of the situation. Confirm that he will have someone meet the responding units at both S. Payne Street and Eisenhower Ave gates.

Contact Security to notify them of the emergency.

The severity of the emergency will determine which buildings should be evacuated. If an alarm is made within any building on the main campus, all employees should be notified to move to the primary assembly point so that all employees can be accounted for. Each department is responsible to assist those that are handicapped or for some other reason cannot evacuate the area on their own. Critical plant operations can be run from remote locations therefore all employees are expected to evacuate immediately.

Based on the emergency it may be necessary to activate the Incident Command Center or notify additional outside agencies. See the contact sheet for a list of agency contacts.

Accounting for Employees

To account for employees during an emergency, AlexRenew employees are divided into the following groups; Operations, Maintenance (Electrical), Maintenance (Mechanical), EC staff (divided by floor) and Laboratory. Contractors and visitors will be accounted for by their AlexRenew point of contact. Each group will have an assembly area Monitor to account for evacuees at the assembly area and inform the Incident Commander if anyone is missing or injured. An employee rooster is used to account for employees within each group.

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Each employee is responsible for contacting their supervisor during a declared emergency. All employees are responsible for reporting to their designated reporting area, if the incident warrants, and will remain there until the all clear sounds or a member of leadership directs them to do so. The highest level of leadership or his/her designee will coordinate to identify for any unaccounted for personnel, contractors or visitors.

Assembly Points

The evacuation point for the Environmental Center is at the back of the EC garage by Holland Lane. The evacuation assembly areas for the main plant is Payne Street gate near Building A and J building gate crossing to the EC. Building floor plans, keys and other assistance as requested will be provided to the fire department.

Evacuation Follow-up and Drills

Incidents, drills and exercises should be documented on an Evacuation Report form. A critique of the evacuation should be done within 24-hours of the drills and/or incidents to identify lessons learned and action items to improve. The critique shall be performed by the Safety Coordinator with others participating as needed. Items to consider when conducting the review.

- Effectiveness of evacuation – did personnel evacuate? Were proper evacuation routes used? Do the designated routes work for you? Were evacuation routes posted, egress properly indicated?
- Alarm effectiveness – was it heard/seen – was it understood?
- Was the correct assembly area used? – Does the location of the assembly areas make sense based on hazards, wind direction, etc.?
- How were off-site personnel accounted for?
- Did personnel report-in properly?
- How effective was the sign-in sheet to account for personnel?
- Evaluate duties and performance of those operating critical equipment.
- Evaluate communication.

ALEXANDRIA renew ENTERPRISES

Emergency Evacuation Sheet

Date:	Time:	Department/Shift:
Name	**Initial by your name**	

ALEXANDRIA renew ENTERPRISES

Emergency Response Drill and Incident Report

Date of Evacuation:_____ Time of Evacuation:_____
Location of the Evacuation:_____
Amount of time for all employees to evacuate?_____
Amount of time for all employees to be accounted for:_____
Brief Description of the Incident:_____

What went well?_____

What Needs Improvement?_____

Action	Risk Rank	Responsible Party	Due Date

Building M Fire Emergency Action Plan

Fundamental Question: Mitigate any property damage to any Alexandria Renew Enterprises property and eliminate any personal injury.

Action Plan Objective: Mitigate any property damage to any AlexRenew property and eliminate any personal injury.

Primary Stakeholders: All AlexRenew Staff

Coordinator / Lead: Safety Manager/ Shift Leader

Progress Key
on time
past due
complete
delayed

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Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
1		**Alarm Activation**				
	1a	Call 9-911 to report the fire; Give the dispatcher the following information	First Responder			
	1b	Your name	First Responder			
	1c	Type of fire i.e.. Electrical, fuel, structural etc.	First Responder			
	1d	Plant Address: 1500 Eisenhower Ave	First Responder			
	1e	Building M where the fire is located at	First Responder			
	1f	Telephone number that you can be reached at	First Responder			
	1g	Stay on the phone until directed by the dispatcher to hang up.	First Responder			
	1h	Then contact the Shift Leader and advise him of the situation	First Responder			
	1i	Shift Leader will have someone meet the responding emergency vehicles at both S. Payne St and Eisenhower Ave gates.	Shift Leader			
	1j	Shift Leader will post guards to insure no one drives past building M until the Fire Department has declared it safe.	Shift Leader			
2		**Assembly Areas**				
	2a	All AlexRenew staff are to stay away from building M until the Fire Department declare the area safe	All Personnel			

Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
	2b	Teams should report to the work area where they begin the work day	Team Members			
	2c	Operations Staff should report to the Building L Control Room	Op. Techs			
	2e	All staff that work in Building J should report to the perimeter fence line across from the front door to Building J	Building J Staff			
	2f	If an assembly area is unsafe those that should report to it should report to the closes safe assembly area and contact their supervisor to inform him of their location	Affected Staff			
	2g	Each Division/Team/Shift is responsible to assist those that are handicapped or for some other reason can not evacuate on their own.	Affected Staff			
	2h	The senior staff member at each area will perform an head count to account for all AlexRenew staff members. That person will then contact the Shift Leader with a head count report. **Do not delay this report.**	Senior Staff Member at all Assembly Areas			
	2i	All staff are to remain in the assembly area until released by the Incident Commander/ or Shift Leader.	All Personnel			
	2j	Staff that have spectra Link phones are to take the phones to the assembly area.	Select Staff			
	2k	The only cars to be driven are these of handicapped persons that can be moved safely to or close to the assembly area	Handicapped Persons			
	2l	The Shift Leader is to call the Engineering Department to inform them of the event. The Engineering Department staff will contact the necessary constriction companies to evacuate the affected areas	Shift Leader			
	2m	The Solutions & Innovations Services staff will contact the necessary constriction companies to evacuate the affected areas	Jeff DuVal/Lisa Racey			
	2n	The Shift Leader should report any missing staff to the responding Fire and EMS personnel.	Shift Leader			
3		**Shutting Down the Foam System**				

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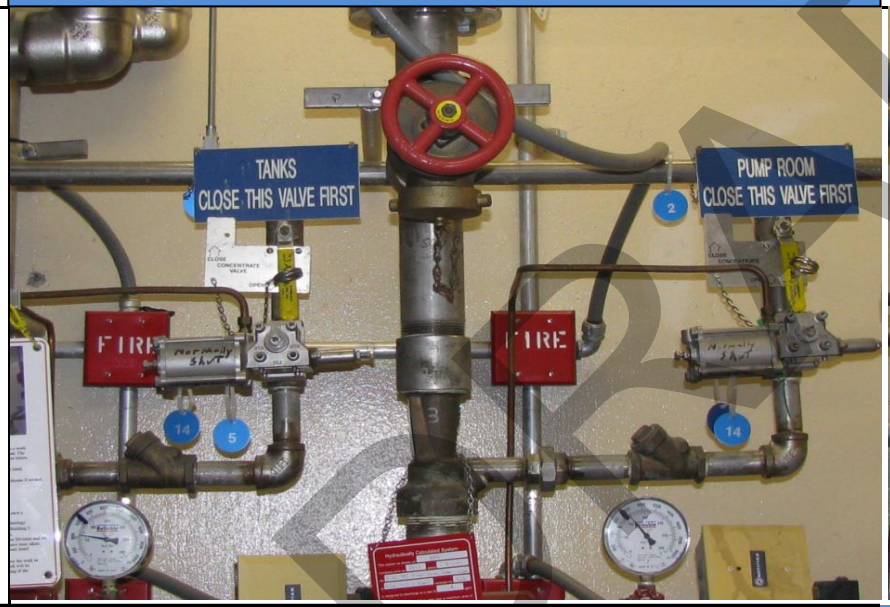
Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
	3a	Explain to the Fire Dept. that if the gate valve supplying sprinkler water to the system is closed before the foam concentration valve the bladder in the tank my be damaged. This my place the system out of service of an extended length of time. The foam concentration valve is just above the Automatic or hydraulic valve that is identified as the Concentration Valve. See picture below.	Shift Leader			
		CAUTION				
		The Foam Concentration ball valve must be closed first				
				Close-up of Concentration Valve 		
		Exception				
	3b	One of the supply gate valves to one of the chemical Storage Tanks my be closed before the concentrate valves as long as the other chemical storage tank valve remains open.				

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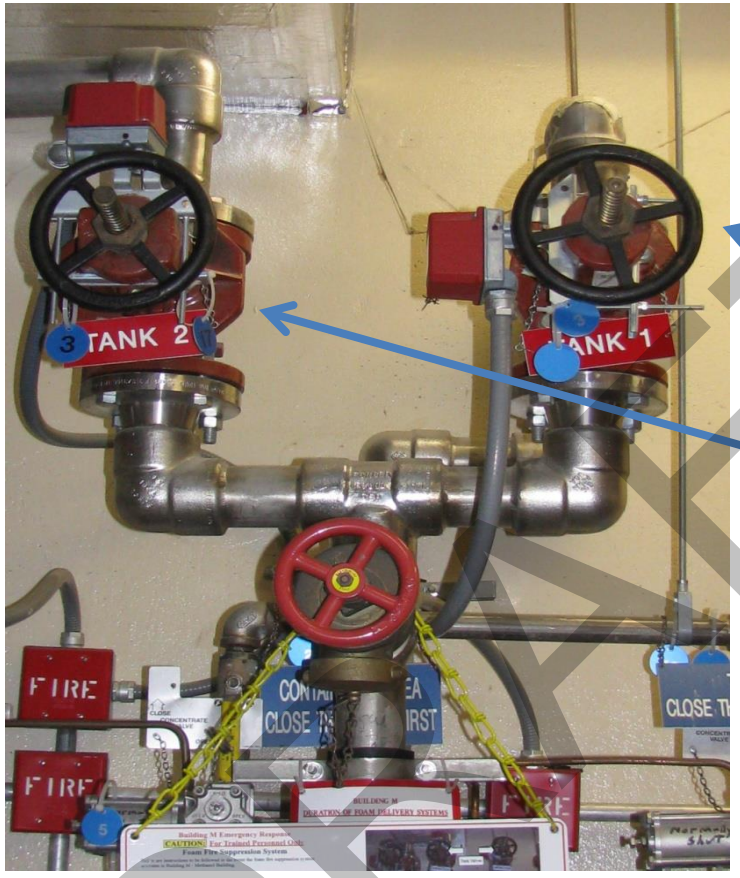
Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
						
4		**Recovery (After the Emergency situation has ended**				
	4a	Do not write a work order , maintenance does not have the tools or training to perform this task	N/A			
	4b	The Team B Team Leader or Shift Leader in his absence shall follow the instructions below.	Team B, Team Leader or Shift Leader			
	4c	Replacement foam is stored in Building L Room L-103 Janitor Closet. Check the quantity of foam on hand.	Team B, Team Leader or Shift Leader	There should be at least 330 gallons stored in 6-55 Gallons drums		
	4d	There is a replacement bladder stored in the same area for the foam storage tank if needed.	Leader or Shift Leader			

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Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
	4e	Contact Vector Fire Technology Inc.	Team B, Team Leader or Shift Leader			
		Phone numbers				
		Primary (610) 466-1717				
		Fay Purvis (610) 662-3055				
		Steve Kiernan (484) 432-3859				
		Steve Kiernan (484) 432-3859				
	4f	Tell the person how much replacement foam is on hand.	Team B, Team Leader or Shift Leader			
	4g	Ask them when we can expect them at AlexRenew to recharge the system	Team B, Team Leader or Shift Leader			
	4h	Contac the Team B Team Leader, Chief Operator and the Safety Manager to inform them of the situation and what actions have been taken	Shift Leader			
	4i	Complete an Incident Record and Resolution Report (IRR).	Shift Leader			
5		**General Information**				
	5a	Arrangements have been made with Vector Fire Technology for them to perform the work as quickly as possible(within 24 hours of the incident) Payment for the work will be arranged after the work has been performed. This is to speed the recharging of the system eliminating the time too process purchase orders in advance.	N/A			
	5b	The Incident Command System may be activated depending on the size and location of the fire/damage to equipment	N/A			
	5c	The location of the Incident Command Post will be determined by the Incident Commander based on the location and severity of the fire and location of the City Fire Command Post	N/A			

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INCIDENT COMMAND SYSTEM (ICS)

I. Introduction

This Emergency Response Plan has been developed to safeguard the employees of the Alexandria Renew Enterprises and to minimize possible danger to the plant infrastructure that might result from the effects of emergencies or disasters.

The purpose of this Emergency Response Plan is to provide procedures to follow during emergency situations. This plan is necessary to protect the health, safety, and welfare of employees and visitors to the Alexandria Renew Enterprises and to provide for the protection of Alexandria Renew property during any emergency situation.

Emergencies can arise from natural disasters or from human activities that are intentional or unintentional and have the potential for creating devastating destruction. It should be recognized that it is impossible to completely cover the full range of possible crisis situations. A good measure of common sense and calm is required in all situations.

II. Emergency Response Team

Alexandria Renew has designated an Emergency Response Team (ERT) that will respond, direct and coordinate critical incidents at Alexandria Renew. This ERT is structured to comply with the Incident Command System (ICS) which is part of the National Incident Management System (NIMS). The ICS is a standardized on-scene incident management system that is the combination of facilities, equipment, personnel, procedures and communications operating within a common organizational structure designed to aid in domestic incident management activities. It is used for a broad spectrum of emergencies, from small to complex incidents, both natural and man-made including acts of terrorism. ICS is used by all levels of government – Federal, State, local and tribal as well as by many private sector organizations.

An ICS enables integrated communication and planning by establishing a manageable span of control. The ICS divides an emergency response into five manageable functions essential for emergency response: Command, Operations, Planning, Logistics and Finance and Administration. The following is a list of staffing for the Emergency Response Team (ERT) using the ICS:

Incident Commander/Liaison Officer:
(During some emergencies this position may be transferred to another IC staff member.

Safety Coordinator

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The Safety Coordinator
then becomes the Safety Officer
for the incident.)

Deputy Incident Commander:	Shift Leaders Engineering Manager/Chief Operator
Operations Section Chief:	Process Manager Chief Operator
Operations Section Leader:	Process Team Leads Laboratory Representative IT Manager

A. Emergency Response Team Activation

The Emergency Response Team will be activated for the following critical incidents:

1. Severe weather
2. Major chemical spill outside the containment areas
3. Spill of any kind off plant site
4. Large fires
5. Complete power failure
6. Explosion
7. Civil disturbance
8. Bio/chemical/bomb threat
9. Pandemic flu
    - Social distancing is recommended during a pandemic. We should not gather a large number of staff together during this time. The Response Team should coordinate as much as possible by phone or email
10. 911 criteria
    - Imminent danger to personnel or property
    - Additional resources are needed
    - Potential impact to other property
11. Other emergencies

B. Activation of the Emergency Response Team (ERT)

<u>During Normal Business Hours</u>

To allow the staff on the scene more flexibility to respond to the emergency, the first person on site may call the front desk at 703-549-3381 ext. 2200. The Administration Staff can assist with other calls as needed.

<u>Nights and Weekends</u>

Try to use the Solids Processing Op Tech to make additional calls as needed. Phone: 703-549-3381 ext. 2211.

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When one of the above has received a call to activate the ERT, they will call the team members listed in Section II informing them of the conditions and any other instructions the person activating the ERT has generated. People making calls during an emergency should leave messages for anyone that does not answer their phone so they can respond when returning to their phone.

Note: Once the ICS has been activated, all ERT members will continually keep the Incident Commander updated as to a means of communicating with them where ever they are located at.

C. Responsibilities of the Emergency Response Team

Incident Commander:

The **Incident Commander** is responsible for all aspects of the response and management of the incident. These responsibilities include:

a. Establishing immediate priorities to stabilize the incident and ensure the safety of responders, bystanders and people involved in the incident.
b. Determining incident objective and strategy.
c. Establishing and monitoring incident organization.
d. Authorizing an Incident Action Plan.
e. Establishing an Incident Command Post at the site, in coordination with the local Fire & Rescue Station and Police Department, to coordinate emergency planning, communication and operations during the emergency.
f. Establish staging areas when needed.
g. Designating evacuation routes, assembly areas, and an area of rescue/refuge, and ensure this information is communicated to employees.
h. Communicating with the Chief Executive Officer, Public Communications Liaison and AlexRenew staff on information about the incident. The Chief Executive Officer or Public Communications Liaison will be the only AlexRenew officials to release information to the media.
i. Prepare after action reports as required.

Liaison Officer

When an incident requires the involvement of Fire & Rescue and/or the Police Department, the AlexRenew Incident Commander becomes a Liaison Officer. The **Liaison Officer** is AlexRenew's contact for AlexRenew's Emergency Response Team. The Liaison Officer's responsibilities include:

a. Establishing and maintaining communication with agencies managing the incident.
b. Providing support to the agencies to aid in managing the incident.
c. Monitoring the status of the incident.
d. Communicating and coordinating with the Chief Executive Officer, Public Communications Liaison and AlexRenew's staff on information about the incident.

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Information Officer

The **Information Officer** (Chief Executive Officer or Public Communications Liaison Only) is responsible for developing and releasing information concerning the incident to the news media, public, AlexRenew's staff and other appropriate agencies and organizations.

Deputy Incident Commanders

Normally the first Deputy on the scene will take charge of the incident becoming the Incident Commander. This position may be transferred to the other Deputy Incident Commander at the appropriate time with both acknowledging the transfer. This transfer is also common when the Safety Coordinator arrives on the scene. All other appropriate staff must be notified of the transfer.

Safety Officer

The Safety Officer function is to develop and recommend measures for assuring personnel safety, and to monitor and/or anticipate hazardous and unsafe situations. Only one SO will be assigned for each incident.

a) Identify and cause correction of occupational safety and health hazards.
b) Continuously monitor workers for exposure to safety or health hazardous conditions.
c) Alter, suspend, evacuate or terminate activities that may pose immanent safety or health danger to the workers.
d) Take appropriate action to mitigate or eliminate unsafe condition, operation, or hazard.
e) Provide training and safety and health information.
f) Perform assessment of engineering controls and PPE.
g) Comply with OSHA Standards.
h) Document both safe and unsafe acts, corrective actions taken on the scene, accidents or injuries, and ways to improve safety on future incidents.
i) Participate in planning meetings.
j) Identify hazardous situations associated with the incident.
k) Review the Incident Action Plan (IAP) for safety implications.
l) Exercise emergency authority to stop and prevent unsafe acts.
m) Investigate accidents that have occurred within the incident area.
n) Assign assistants, as needed.

The **Deputy Incident Commanders** serves as the principal assistant to the Incident Commander. He/she performs such duties as the Incident Commander may assign and is responsible for:

Deputy #1 - Shift Leader

a) Acting in the absence of the Incident Commander.
b) Coordinating personnel accountability reports with the Operation Sector Leaders.
c) Coordinating the safe evacuation of persons requiring assistance or notifying Fire & Rescue as to the locations of people with disabilities needing assistance with evacuation.
d) Establishing alternate designated reporting areas or evacuation routes upon request from the Sector Leader.
e) Maintaining liaison with the Security Force (where applicable). This is delegated to Deputy #2 when on site
f) Coordinating with on-site consulting and construction firms to ensure personnel accountability. This is delegated to Deputy #2 when on site.
g) Coordinating with AlexRenew's staff to ensure that visitors are accounted for on-site and directing them to designated reporting areas.
h) Assisting in providing logistic support.
i) Continues operation of the plant and or shutting down equipment as needed to protect people and the environment.
j) Prepare after action reports as required.

Deputy #2- Engineering Manager (or Chief Operator during floods or hurricanes)

a) Acting in the absence of the Incident Commander.
b) Maintaining liaison with the Security Force (where applicable).
c) Coordinating with on-site consulting and construction firms to ensure personnel accountability.
d) Coordinating with AlexRenew's staff to insure all visitors are accounted for on-site and directing them to the designated reporting area.
e) Assisting in providing logistic support.
f) Prepare after action reports as required.

Operation Sector Chief

The **Operation Sector Chief** is responsible for their respective personnel accountability and operational aspects. The Operation Sector Chief is also responsible for directing the logistic support by providing resources to minimize environmental impact and process upset.

Operation Sector Leader

The **Operation Sector Leaders** are responsible for:

a) Assuring that all personnel have reported to their designated reporting area and reporting the personnel accountability to the Deputy #1. **(Do not delay this report)**
b) Providing logistic support of resources to minimize safety hazards, environmental impact and process upset.

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c) Ensuring that the designated reporting areas are safe for employees. Requesting an alternate reporting area from Deputy #1 if the primary reporting area is unsafe.
d) Prepare after action reports as required.

Employee Responsibilities

To ensure the Emergency Response Plans are effective, all employees MUST:

a) Learn to recognize and respond to alarm signals.
b) Become familiar with the evacuation route from the regular work area to the emergency exit, out of the building, and to their designated reporting area.
c) Learn where the fire alarm stations are and how to activate the alarm.
d) Know the Emergency Response Team and their responsibilities.
e) Be familiar with the Emergency Response Action Plans.
f) Know when to call 9-911 - imminent danger to personnel or property, a situation that requires additional resources or potential impact to other property or the environment.
g) When calling 9-911 to report emergencies – always give the building's number or letter, location/address, room number, and any special conditions.

D. People Accountability Procedure

Each Incident Commander, Deputy Incident Commander and the Operation Sector Leaders are to maintain an up to date AlexRenew roster with their EAP. Each employee is responsible for contacting their supervisor during a declared emergency. All employees are responsible for reporting to their designated reporting area, if the incident warrants, and will remain there until they are released by their supervisor. The Emergency Response Team (ERT) will coordinate to identify any unaccounted for personnel, contractors or visitors.

E. Designated Reporting Areas

This is not the same as your assembly areas when there is a fire.

- Each Team should report to their initial work area where they start the day.
- Operations staff should report to L Building control room.
- Administrative staff with offices in J Building should report to the Administrative Assistant, then report to their work station.
- Lab personnel should report to the Laboratory.

Secondary Locations:

- If an assembly area listed above is unsafe, those staff members will report to the closest safe assembly area.

Note: All staff members are to remain in their assembly areas until released by the Incident Commander.

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F. Incident Command Post

Primary Location
Building G1 room 205 has been designated as AlexRenew's primary Incident Command Post. **Phone #** (703) 519-9023 when installed.

Secondary Location:
In the event the primary location is not a safe location, the Command Post will be moved to J Building Room 104 or an alternative designated by the IC.

III. Emergency Procedures for Discovery, Response and Recovery

This section contains general procedures for AlexRenew's personnel involved in discovery, response and damage assessment activities.

A. Discovery

When a situation occurs that is judged to be of an emergency or suspicious nature, the person who first notices the situation should call 9-911 if an immediate response by police, fire, or emergency medical services is necessary. If the incident is active and impacts property, poses imminent danger to personnel, or requires additional resources then, immediately call 9-911 to report the incident. Next, report the incident to the Incident Commander at ext. 2231 or 703-232-0101 or the Shift Leader at ext. 2221 when the Safety Coordinator is not on the plant. If the Safety Coordinator is contacted first, then contact the Shift Leader secondly. The Incident Commander or Shift Leader will make additional calls as needed.

B. Response

When notifying 9-911 or the Incident Commander the following general information is required:

- Date, time, location
- Persons injured or in danger of being injured
- Type of incident/description of emergency
- Corrective actions being taken to address the situation
- What additional resources do you need
- The current status of AlexRenew's personnel, equipment, vehicles, communication capabilities, facilities and other resources.

The employee who first noticed the incident should remain in a safe location in the vicinity to meet and assist medical, fire, and police personnel and other first responders as necessary.

Emergency Response Team
The Incident Commander and both Deputy Incident Commanders should report to the emergency scene. Other Emergency Response Team members should report to their designated reporting area and wait for further instructions from the Incident Commander or Deputy Incident Commander.

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The Emergency Response Team will perform the following:

- Ensure that personnel are safe and accounted for.
- Provide additional direction to mitigate the incident.
- Ensure that safety procedures are being followed.
- Secure the site, rope off the area.
- Assess and investigate the incident.
- Call for additional resources or 9-911 if needed.
- Establish Staging Area(s) if needed.
- Open the Incident Command Post if needed.
- Coordinate with Fire & Rescue, Police, regulatory agencies, contractors and others.
- Call or assign an Emergency Response Team member to call City officials, regulatory agencies, required contractor(s) for clean-up, and others as required.
- Coordinate with the Managers to begin damage assessment.
- Appoint a Recovery Manager.
- Document the incident.

Damage Assessment

Damage assessment is used to determine the extent of damage, estimate repair or replacement costs, and identify the resources needed to return the damaged system to full operation. This assessment is accomplished during the emergency response phase of the event, before the recovery phase is implemented.

The Incident Commander will coordinate with the Operations Sector Chiefs to begin the damage assessment. The Engineering Manager will establish a Damage Assessment Team (DAT). The DAT will consist of operations and maintenance personnel with representatives from safety, engineering and procurement. Team composition may vary, depending upon the nature and extent of the emergency. The Maintenance Team Planner/Scheduler who has affected facilities or equipment will open work orders indicating repairs needed due to the emergency.

Damage assessment procedures should follow the guidelines established for system start up and operability checks. At a minimum, the damage assessment team will complete the following activities:

- Conduct an initial analysis of the extent of damage to the system or facility.
- Estimate the repairs required to restore the system or facility; the estimate should consider supplies, equipment, rental of specialized equipment (e.g., cranes), and additional staffing needs.
- Provide the list of repairs to the procurement representative so a cost estimate to conduct the repairs can be developed.

C. Recovery

Once the emergency is under control, attention must be paid to resuming normal activities and service. Alexandria Renew Enterprise's approach to recovery planning

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and activities is presented in this section.

During the emergency response operations, the Process Manager will appoint a Recovery Manager. The Recovery Manager is responsible for selecting a recovery team and developing a recovery strategy prior to emergency termination.

The Recovery Manager will normally be one of the Process Leader that is familiar with the systems that may be affected by the emergency. He/she will have the responsibility and authority to coordinate recovery planning; authorize recovery activities; protect the health and safety of workers and the public; and initiate, change, or recommend protective actions. Additional responsibilities include the following:

- Facilitate the transition from emergency to recovery operations.
- Coordinate with the Safety Coordinator and the Engineering Manager to ensure that all appropriate safety inspections have been completed.
- Coordinate all vendor and contractor activities that occurs onsite.
- Coordinate the completion of emergency repairs and schedule permanent repairs.
- Notify key agencies of emergency repair status and the scheduled completion of system repairs.
- Complete permanent repair and/or replacement of system facilities.
- Release repaired facilities and equipment for normal use.
- Replace, or authorize the replacement of materials and supplies used in the emergency.
- Document all recovery activities.

The Recovery Manager determines the expertise needed based on the situation and selects the personnel necessary for the recovery team. In general, the composition of the recovery team is based on the nature and extent of the emergency and includes:

- Technical advisors to the Recovery Manager, which may include external experts such as industrial hygienists or fire protection specialists.

- Wastewater system personnel with the technical expertise to direct post-incident assessment activities and to analyze the results. Maintenance, operations, and engineering staff are expected to fill these positions.
- Regulatory Compliance Manager to notify all appropriate regulatory agencies.
- Safety Coordinator (will notify VOSHA if needed).

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The following activities will be directed by the Recovery Manager and will be executed by the recovery team as required following an incident or emergency situation.

- Install warning signs, barriers and shielding as needed.
- Take measures to protect workers and the public from hazardous exposures.
- Complete detailed evaluations of all affected wastewater utility facilities and determine priorities for permanent repair, reconstruction, or replacement at existing or new locations.
- Begin repair activities design and make bids for contractor services.
- Make necessary repairs to the system and un-tag repaired facilities and equipment.
- Restore all telecommunications, data processing, and similar services to full operation.
- Complete assessment of losses and costs for repair and replacement, determine approximate reimbursements from insurance and other sources of financial assistance, and determine how residual costs will be financed by the wastewater utility.
- Define needs for additional staff
- Coordinate with the Human Resource Manager to initiate recruitment process, and adopt temporary emergency employment policies as necessary.
- Coordinate with the Purchasing Agent in order to execute agreements with vendors to meet service and supply needs.
- Address needs for handling and disposing of any hazardous waste generated during recovery activities.
- Control discharges as a result of recovery activities within regulatory and environmental compliance limits.
- Collect cost accounting information gathered during the emergency. Coordinate with personnel assigned to prepare request for Emergency Disaster Funds (FEMA and/or State).
- Debrief staff to enhance response and recovery efforts, identify lessons learned, developing action plans and follow-up mechanisms.
- Prepare after action reports as required.

D. After Action Reports

After action reports will normally be completed within seven (7) days of the incident, unless otherwise noted by the Safety Coordinator or the Chief Executive Officer. After action reports may require AlexRenew staff to remain after their normal shift has ended as part of an investigation or may require those involved to report back to work outside normal work hours. The person preparing the After Action Report will be responsible to make the call for an after hour investigation. Report format should normally follow the example beginning on the next page.

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Alexandria Renew Enterprises
<Incident> After Action Report

DATE:

SUBJECT: After Actions Report **– (List the Incident Name and Date)**

FROM:

TO:

CC:

PURPOSE:

EXECUTIVE SUMMARY:

LESSONS LEARNED

COMMENTS

What went well?

What needs improvement?

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ACTION ITEMS (List each action item with a person responsible to oversee or complete the action with a suspense date)

Appendix:

Participants

Photos:

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Medical Emergency Action Plan

Fundamental Question: Ensure Seriously Injured Persons Receive Prompt Medial Attention

Action Plan Objective: Insure Seriously Injured Persons Receive Prompt Medial Attention

Primary Stakeholders: All AlexRenew Staff

Coordinator / Lead: Safety Coordinator

Progress Key
- on time
- past due
- complete
- delayed

Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
1		**Call 9-911. Give the dispatcher the following information**	First Responder			
	1a	Your name: The name of the person making the call	First Responder			
	1b	Nature of injuries	First Responder			
	1c	Plant Name	First Responder			
	1d	Plant Address	First Responder			
	1f	Building Letter or Number you are in or close to	First Responder			
	1g	Telephone number you are at	First Responder			
2		**General Instructions**				
	2a	Stay on the phone until directed by the dispatcher to hang up.	First Responder			
	2b	Contact the Shift Leader and advise him of the situation.	First Responder			
	2c	Shift Leader will have someone meet the responding unites at both S. Payne St and Eisenhower Ave gates.	Shift Leader			
	2d	Provide the responding Emergency Medical Personnel with a copy of the MSDS for injuries that involved a chemical	First Responder/Shift Leader			
	2e	Contact the Safety Coordinator as soon as possible	First Responder/Shift Leader			
3		**Location of Automatic External Defibrillators**				
	3a	Building A; across the hall from the lunch room.				
	3b	Building C; next to the Fire Alarm Panel				

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Task	Sub-task	Actions / Tasks	Assigned To	Resources	Due Date	Progress
	3c	Building J; next to the Lunch Room				
	3d	Building G-1; in the Control Room				
	3e	Building L in the Control Room				

Anticipated Challenges / Obstacles

Shortage of staff to man gates when only the Shift is working

Benchmarks / Milestones

Expected Outcome following the attainment of the Action Plan Objective			
Communication Plan			
	See above		
Scope			
High Level Scope			
Business Requirements			
		Defibrillators are only to be used by trained personnel	

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Team Meetings and Weather Monitoring

The Weather Emergency Team will meet during normal business hours if severe weather is forecast to being within the next 24-48 hours. The team will be briefed on the latest forecast, review the status of emergency checklist procedures and discuss departmental action should the predicted weather occur. These personnel will be on 'standby' and available by phone during the time preceding the predicted weather. The Safety Coordinator will send periodic forecast updates via email to team members. The night Shift Leader will monitor weather conditions and forecasts throughout the night. Should inclement weather occur the Shift Leader will notify the Director of Production who will then communicate to the other team members.

Inclement Weather Procedures

The following procedures help identify necessary functions for renew staff to efficiently and safely restore essential utility services to the citizens and visitors of the City of Alexandria.
In the event of inclement weather, the following procedures shall be followed:

Hurricane

Pre-Season Preparations - May

a. Complete Hurricane Preparations Checklist for both Safety and Maintenance Departments.

Tropical Storm/ Hurricane Watch

b. Secure all facilities
c. Test all communication equipment (i.e. pagers, radios, and cell phones).
d. Test run all generators.
e. Track storm progress and forward to appropriate personnel.

Hurricane Warning (Hurricane Strike Anticipated within 24-hours.)

f. Upon issuance of hurricane warning activate the Emergency Response Center (ERC), simultaneously with the Emergency Operations Center (EOC), and staff with appropriate support personnel (Refer to Attachment I).
g. Director to meet with lead response personnel and establish time to report to appropriate work stations. Distribute personnel and equipment use reporting forms for tracking storm-related manpower and repairs (Refer to Attachment K).
h. Confirm personnel contact telephone numbers, radio numbers and pager numbers. Distribute list to appropriate support personnel and Emergency Management.
i. Establish contact methods and times to update progress to the ERC.

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j. Establish where to meet for post-hurricane operations.

k. Secure facilities at outlined in Attachment C.

l. After preparation procedures are complete allow hurricane response staff to go home to ensure their family's safety and secure their home and belongings.

Hurricane Strike

m. Remember - PERSONAL SAFETY IS YOUR TOP PRIORITY AT ALL TIMES (NO County personnel shall go out once the wind speed exceeds 45 MPH).

n. Man all critical facilities listed below, with a minimum of two (2) response personnel at each location.

o. If commercial power is on; maintain all essential facilities and equipment;

p. If commercial power is off; maintain back-up power supply system's necessary to support all essential treatment and pumping facilities.

q. Critical Facilities:

   i. Northwest Water Treatment Plant (1000 kVA, 1200-amp diesel generator).

   ii. Bell Swamp Storage and Booster Pumping Station (diesel generator and auxiliary diesel drive).

   iii. Kings Bluff Raw Water Pumping Station (auxiliary diesel drive and ancillary equipment support diesel generator) (LCFWSA's facility).

   iv. Booster Pumping Station No. 1 (diesel generator).

   v. Water Treatment Plant (diesel generator).

   vi. Booster Pumping Station No. 6 (diesel generator)

Post-Hurricane Response

The Incident Commander will compile a report. The report will document all storm related activities. Those activities accomplished satisfactorily as well as those that need improvements will be used to improve AlexRenew's response to future emergencies. The report will contain all cost reports from the storm generated by each team or shift.

Superintendent, or designated personnel, to contact Public Water Supply and Water Quality personnel (Wilmington Regional Office) and inform of the status of the water treatment and distribution systems (see Tab X of Emergency Response Plan).

Equipment and facilities will be restored with the following priority:

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i. Northwest Water Treatment Plant - high service pumps.
ii. Bell Swamp Storage and Booster Pumping Station.
iii. Kings Bluff Raw Water Pumping Station.
iv. Northwest Water Treatment Plant - treatment facility.
v. 211 Water Treatment Plant and all high-volume wells.
vi. Booster Pumping Station No. 6 (Shallotte).
vii. Booster Pumping Station No. 1 (Oak Island).
viii. Leland Industrial Park WWTP.
ix. Clairmont WWTP.
x. Lift Station No. 1 (Industrial Blvd.).
xi. Lift Station No. 3 (Mercantile Dr.).
xii. Lift Station No. 2 (Industrial Blvd. @ Mt. Misery Rd.)
xiii. Lift Station No. 4 (C.T. Specialties).
xiv. Booster Pumping Station No. 3 (Holden Beach).
xv. Booster Pumping Station No. 4 (Ocean Isle).
xvi. Booster Pumping Station No. 7 (Shallotte Point).
xvii. Brunswick Tech Booster Pumping Station.

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CHECKLISTS

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Snow Book Copy-DO NOT REMOVE

Shift Leader Instructions:

Your new snow removal contractor is:

LLugo LLC.
Luis (owner) is at 1-571-436-7852

Per the attached instructions, when an inclement cold weather event affects our local area (snow and/or ice), LLugo LLC will contact AlexRenew to verify that we require snow removal services.

As stated in the contract, when Reagan National Airport registers 1-1 ½ inches of snow, LLugo LLC is required to contact AlexRenew to determine our needs. Upon receiving the call from LLugo, LLC the Shift Leader is responsible for determining if AlexRenew requires snow removal.

The Shift Leader may contact LLugo LLC once they determine the need for snow or ice removal, even if the threshold of snowfall at Reagan national Airport has not occurred.

LLugo LLC should arrive within 2 hours. Please ensure someone is in the Control Room to sign the contractor timesheet for start and stop times. 2018/2019 includes a new form. Please get familiar with it.
***The Shift Leader has the responsibility to ensure all areas within the main plant and EC are clear of snow and ice.**

As always, keep an eye on the weather forecast before, during, and after the initial response. Notify LLugo LLC if you anticipate an additional response and when they are expected to return for additional services. Use this information also to determine if "stand-by" time is needed. For more information on "stand-by" time, see Extreme Events below.

The contract requires a 2-hour minimum pay for each visit, so if they finish their initial response prior to being on-site for two hours, contact the Facilities Manager to determine if additional services are required at the EC.

LLugo will also have four extra workers on two of the trucks to clear the sidewalk in front of the Environmental Center (EC). Please contact the Facilities Manager to ensure this work is complete prior to releasing them for other work.

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The two trucks will remain on site and working until the sidewalks in front of the EC and athletic field are clear. Please ensure that the J building sidewalks are clear of snow and ice (if required).

For extreme events: Generally 10" of snow in 10 hours or less, you are authorized to keep the contractor on site. This is called "stand-by" time and he is getting paid ½ his hourly rate to be at your disposal. If there is a break in snowfall during this significant event of 2 -3 hours or less, use this option to ensure you have the resources you need, when you need them.

The Shift Leader, maintenance personnel (if any) and Facilities Manager should coordinate with each other when LLugo is on-site for support.

Ice melt for the EC (only) and a spreader are available for the contractor's use; they are located in the parking garage at the EC.

If a significant icing event is expected and you think you may need de-icing services, please call me at 703-667-0041 or Steve Hill at 703-944-4587.

Other personnel who can assist in decision making include:

Maintenance Supervisor:	**703-944-4587**
Team Lead (Mechanical):	**703-357-7396**
Director of production:	**571-318-7729**
Facilities Manager:	**703-667-0041**
Safety Coordinator:	**703-408-6090**

Maintenance would prefer to keep snowmelt and de-icing services in-house, but you are authorized to contact the vendor for these services if emergency/ hazardous condition exist.

Contact the facilities manager at 703-667-0041, if you have any questions concerning our snow and ice service.

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Pandemic Influenza Emergency

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BACKGROUND:

A pandemic is a global disease outbreak. An influenza pandemic occurs when a new influenza virus emerges for which there is little or no immunity in the human population; begins to cause serious illness; and then spreads easily person-to-person worldwide. A worldwide influenza pandemic could have a major effect on the global economy, including travel, trade, tourism, food, consumption and eventually, investment and financial markets. Planning for pandemic influenza by business and industry is essential to minimize a pandemic's impact.

During a pandemic, transmission can be anticipated in the workplace among co-workers in general work settings. A pandemic would cause high levels of illness, death, social disruption, and economic loss.

If an influenza pandemic occurs, many people could become sick at the same time and would be unable to go to work. Many would stay at home to care for sick family members. In addition, depending on the severity of the outbreak, there could also be travel restrictions. Travel restrictions coupled with a high rate of illness could affect the delivery of essential goods and services. Movement of essential personnel, goods and services over a period of months is a concern for AlexRenew. AlexRenew could also be called upon to help in the community, state of

Virginia, Maryland or Washington DC through Water and Waste Water Response Networks.

This Emergency Action Plan is only one component of the AlexRenew's pandemic preparedness and response activities. Additional information can be found in AlexRenew's, Workplace Pandemic Response Policy located in the Personnel Policies and Procedures Manual.

World Health Organization (WHO) Phases/Stages of Pandemic Influenza and AlexRenew's Response Levels

Pandemic Phase Level	World Health Organization Definition	ARENEW Response Level
Phase 1	No animal influenza virus circulating among animals has been reported to cause infection in humans	Normal Business Operations
Phase 2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.	Normal Business Operations
Phase 3	An animal or human-animal influenza reassortment virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.	Normal Business Operations
Phase 4	Human-to-human transmission (H2H) of an animal or human-animal influenza reassortment virus able to sustain community-level outbreaks has been verified	Alert
Phase 5	The same identified virus has caused sustained community level outbreaks in two or more countries in one WHO region.	* Threat or Pandemic State of Emergency
Phase 6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region.	* Threat or Pandemic State of Emergency
Post-Peak Phase	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.	Return to Normal Business Operations with Lessons Learned
Post Pandemic	Levels of influenza activity have returned to the levels seen for seasonal influenza in most, countries with adequate surveillance	Return to Normal Business Operations with Lessons Learned

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* Phase 5 and 6 Threat or Pandemic State of Emergency are determined and announced by the Chief Executive Officer based on the local community and AlexRenew influenza situation.

Staff Responsibilities

Note: Some of these responsibilities may change as the conditions with the pandemic and staff available to operate the plant and critical goods and services availability change.

Phase 1,2 and 3 - Normal Business Operations

The Workplace Pandemic Response Policy, Emergency Action Plan and other related documents will be periodically reviewed. The Safety Manager and Employee Services Manager will initiate periodic employee briefings on pandemic preparedness, response activities and good health practices which will ultimately minimize the spread of contagious diseases.

Phase 4 - Alert;

The Safety Manager will begin monitoring the pandemic situation through websites and other news media. Updates are forwarded to the Leadership Team, all members of the Emergency Response Team (See Incident Command System Emergency Action Plan) and other Management Staff as deemed necessary. This flow of information will continue until the situation has been moved back to Phase 1,2,3 or a Post Pandemic (Blue) response level or when directed by the Chief Executive Officer.

Phase 5 - Pandemic Threat

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A. Safety Manager

- Will continue to monitor the situation and provide updates to the Leadership Team, all members of the Emergency Response Team and other Management Staff as necessary.
- Communicate with the City Health Department and The City Emergency Management group.
- Provide preventive guidance to all staff based on the Virginia Department of Health or the City of Alexandria Department of Health recommendations to the pandemic.
- Assist AlexRenew staff when needed due to the pandemic. See "D" below.
- Review and update existing plans and procedures as recommended by Health organizations when they change.

B. Employee Services Manager

- Provide the Chief Executive Officer, all other Managers and the Safety Manager with weekly trend reports that measure AlexRenew's current absenteeism rates.

C. Chief Executive Officer or his/her designee

- Receive frequent updates from the Safety Manager and Employee Services Manager to the pandemic.
- May initiate a ninety (90) day Pandemic Response Period (PRP) Phase 5 or 6 based on the number of confirmed cases of Pandemic Influenza flu within the local area of population or AlexRenew itself.

D. Emergency Response Team (Pandemic Response Team)

- Will coordinate and monitor AlexRenew's response to the pandemic.
- Will address and respond to any emergency situation that is not specifically addressed within this Action Plan, Policies within the Personnel Policies and Procedures Manual or other components of AlexRenew's business management plan that cannot successfully continue to operate normally.

E. Supervisors/Leads

- Receive updates from the Safety Manager
- Submit leave slips for employees as describe in the Workplace Pandemic Response Policy.
- Send visibly sick employee home as describe in the Workplace Pandemic Response Policy.
- May separate teams into different work areas in an effort to minimize contact.

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- May rotate lunch and break periods as well in an effort to minimize personal contact.
- When possible rotate time in the locker rooms for changing at the beginning and end of a shift.
- Notify the Emergency Response Team – (Deputy Incident Commander # 2) if they see contract workers that appear to be ill with flu like symptoms.
- Develop a list of essential goods and services that may become a problem to receive if the pandemic worsens and submit the list to the Safety Manager (See Appendix A)
- Ensure essential supplies necessary to provide essential services are available; consider stockpiling if needed. (See Appendix A)
- Notify the Emergency Response Team – (Incident Commander) if the team is experiencing problems getting critical supplies and goods to perform critical work to continue to process clean water and class A biosolids in a safe atmosphere.
- Prepare to perform essential services **only** if staff levels fall short.
- Team C Team Leader: Monitor the company that provides AlexRenew with polymer during phase 5 and 6 to determine if there will be any problems with the delivery of products. This inquiry should also include the trucking company that delivers the polymer.

F. Planners/Schedulers

- Identify how essential services will be delivered when there are shortages of key personnel and essential supplies
- Increase supplies of gloves, masks, wiping towels, disinfectant and cleaning supplies.
- Determine critical supplies stocked in the Warehouse that will need to be inventoried regularly.

G. Lab

- Identify how essential services will be delivered when there are shortages of key personnel and essential supplies
- Train/retrain Operations and Process Technicians on sample preservation procedures.
- Insure AlexRenew's mutual agreement with Arlington and Fairfax County's is available to the Emergency Response Team Incident Commander.

H. Shift Leader

- Monitor the chemical companies during phase 5 and 6 to determine if there will be any problems with the delivery of products.
- Maintain maximum levels of all process chemicals. Monitor on a daily

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basis

I. Training Coordinator
- Insure all classes listed above are scheduled and adequate staff are ready to fill in position where needed.

J. All Staff
- Take reasonable precautions to protect themselves and others against the spread of the flu (See Appendix B)
- Employees experiencing flu-like symptoms are not to report to work. (See AlexRenew's Workplace Pandemic Response Policy located in the Personnel Policies and Procedures Manual covering leave during a Pandemic Response Period.)
- Eliminate as many face to face meetings as possible.

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Phase 6 and Post-Peak Phase - Pandemic State of Emergency

A. Chief Executive Officer
- Chief Executive Officer or his/her designee will initiate Phase 6 of AlexRenew's Pandemic Response Period (PRP) based on the number of confirmed cases of Pandemic Influenza flu within the local area of population and AlexRenew itself.

B. Safety Manager
- Will continue to monitor the situation and provide frequent updates to

the Leadership Team, all members of the Emergency Response Team and other Management Staff to the pandemic.

- Communicate with the City Health Department and The City Emergency Management group.
- Provide preventive guidance to all staff based on the Virginia Department of Health or the City of Alexandria Department of Health recommendations to the public.
- Assist AlexRenew staff when needed due to the pandemic. See "D" below

C. Employee Services Manager

- Provide the Chief Executive Officer, all other Directors and the Safety Manager with daily trend reports that measure AlexRenew's current absenteeism rates.

D. Emergency Response Team (ERT) (Pandemic Response Team)

- ERT members will keep the Incident Commander informed (IC) of any change in their health status that will keep them away from work at AlexRenew.
- ERT members will keep the IC informed of their location if it is not at their home or their cell phone does not have service where they are going to be located at.
- Will coordinate and monitor AlexRenew's response to the pandemic.
- Will address and respond to any emergency situation that is not specifically addressed within this Action Plan, Policies within the Personnel Policies and Procedures Manual or other components of AlexRenew's business management plan that cannot successfully continue to operate normally.

E. Supervisors/Leads

- Receive updates from the Safety Manager
- Submit leave slips for employees as describe in the Workplace Pandemic Response Policy.
- Send visibly sick employee home as describe in the Workplace Pandemic Response Policy.
- May separate teams into different work areas in an effort to minimize contact.
- May rotate lunch and break periods as well in an effort to minimize contact.
- When possible rotate time in the locker rooms for changing at the beginning and end of a shift.
- Notify the Emergency Response Team – (Deputy Incident Commander # 2) if they see contract workers that appear to be ill with flu like symptoms.

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- Develop a list of essential goods and services that may become a problem to receive if the pandemic worsens. (See Appendix A)
- Ensure essential supplies necessary to provide essential services are available; consider stockpiling if needed. (See Appendix A)
- Notify the Emergency Response Team – (Incident Commander) if the team is experiencing problems getting critical supplies and goods to perform critical work to continue to process clean water and class A biosolids.

F. All Staff

- Take reasonable precautions to protect themselves and others against the spread of pandemic influenza (See Appendix B, C and D)
- Keep a minimum of 6 feet from all others even if they do not appear to be affected.
- Employees experiencing flu-like symptoms are not to report to work. (See AlexRenew's Workplace Pandemic Response Policy located in the Personnel Policies and Procedures Manual during a Pandemic Response Period.)
- Staff with influenza-like illness should remain at home (except to get medical care or for other necessities) until at least 24 hours after they are free of fever (100° F [37.8°C]), or signs of a fever without the use of fever-reducing medications.
- Eliminate as many face to face meetings as possible.

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Appendix A:

Essential Services

The following are services that must be monitored during Phase 5 and 6 when residents of Alexandria and/or surrounding areas have been confirmed with influenza pandemic.

Service	Responsible Position	Notes
Transportation of Grit	Team A Team Leader	
Transportation of Biosolids	Team C Team Leader	Keep Biosolids inventory as low as possible
Trash Disposal	Team D Team Leader	City of Alexandria Trash Pickup
Boiler Testing	Team D Team Leader	Cascade Water Services
Quarterly Contract for Manhole Pumping	Team D Team Leader	Power Secure
Switchgear work	Team D Team Leader	Global Substation Services
Herring Electric	Team D Team Leader	Contractor could be needed if work is going on that they were awarded

Essential Goods

The following are essential goods that must be monitored during Phase 5 and 6 when residents of Alexandria and/or surrounding areas have been confirmed with influenza pandemic.

Essential Goods	Responsible Position	Notes
All Process Chemicals	Shift Leader	See Loss of Chemicals

AlexRenew Staff Requirements

Many plant staff (not just Process Technicians) have been crossed trained and can provide service though out the plant. AlexRenew reserves the right to move staff as needed and have them perform additional duties to allow AlexRenew to continue safe operations.

Minimum numbers of staff needed to safety operate the team areas under normal conditions:

Team	Staff Needs	Remarks
Operations		
Laboratory		
Team A Team Leader		
Team B Team Leader		
Team C Team Leader		
Team C Team Leader	One Maintenance Technician One Control Systems Technician Two Process Technicians	

Appendix B

Protect Yourself from Catching Influenza (H1N1)?

The main route of transmission of the new influenza A(H1N1) virus seems to be similar to seasonal influenza, via droplets that are expelled by speaking, sneezing or coughing. You can prevent getting infected by avoiding close contact with people who show influenza-like symptoms (trying to maintain a distance of at least six (6) feet if possible) and taking the following measures:

- avoid touching your mouth, eyes and nose;
- clean hands thoroughly with soap and water, or cleanse them with an alcohol-based hand rub on a regular basis (especially if touching the mouth and nose, or surfaces that are potentially contaminated);
- avoid close contact with people who might be ill;
- reduce the time spent in crowded settings if possible;
- improve airflow in your living space by opening windows;
- practice good health habits including adequate sleep, eating nutritious food, and keeping physically active.

Lastly, we encourage you to plan ahead—in case you get sick or have to care for sick family members. Part of your plan should include stocking up on household, health, and emergency supplies, such as water, Tylenol® to reduce a fever, and non-perishable foods.

Appendix C

What About Using a Mask?

In community and home settings, the use of facemasks and respirators generally are not recommended. However, for certain circumstances as described in Table 1, a facemask or respirator may be considered, specifically for persons at increased risk of severe illness from influenza.

Groups at Higher Risk for Severe Illness from 2009 Influenza A (H1N1) Infection

Groups of people at higher risk for severe illness from 2009 influenza A (H1N1) infection are thought to be the same as those people at higher risk for severe illness from seasonal influenza. These groups include:

- Children younger than 5 years old
- Persons aged 65 years or older
- Children and adolescents (younger than 18 years) who are receiving long-term aspirin therapy and who might be at risk for experiencing Reye syndrome after influenza virus infection
- Pregnant women
- Adults and children who have asthma, chronic pulmonary, cardiovascular, hepatic, hematological, neurologic, neuromuscular, or metabolic disorders such as diabetes;
- Adults and children who have immunosuppression (including immunosuppression caused by medications or by HIV)
- Residents of nursing homes and other chronic-care facilities.

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See Table Next Page

Table 1. CDC Interim Recommendations for Facemask and Respirator Use for Home, Community, and Occupational Settings for Non-Ill Persons to Prevent Infection with 2009 H1N1 [1 2]

Setting	Persons not at increased risk of severe illness from influenza (Non-high risk persons)	Persons at increased risk of severe illness from influenza (High-Risk Persons) 3
Community		
No 2009 H1N1 in community	Facemask/respirator not recommended	Facemask/respirator not recommended
2009 H1N1 in community: not crowded setting	Facemask/respirator not recommended	Facemask/respirator not recommended
2009 H1N1 in community: crowded setting	Facemask/respirator not recommended	Avoid setting. If unavoidable, consider facemask or respirator [4] [5]
Home		
Caregiver to person with influenza-like illness	Facemask/respirator not recommended	Avoid being caregiver. If unavoidable, use facemask or respirator [4] [5]
Other household members in home	Facemask/respirator not recommended	Facemask/respirator not recommended
Occupational (non-health care)		
No 2009 H1N1 in community	Facemask/respirator not recommended	Facemask/respirator not recommended
2009 H1N1 in community	Facemask/respirator not recommended but could be considered under certain circumstances [4] [5]	Facemask/respirator not recommended but could be considered under certain circumstances [4] [5]

** For additional information on face masks consult the CDC website "Use to Reduce 2009 Influenza A (H1N1) Virus Transmission".

Appendix D

Should I Go to Work if I Have the Flu but Am Feeling OK?

No. Whether you have influenza (H1N1) or a seasonal flu, you should stay home and away from work through the duration of your symptoms. This is a precaution that can protect your work colleagues and others.

You are reminded that symptoms of H1N1 virus typically include fever, cough and sore throat. Additional symptoms may include headache, chills, fatigue and body aches. Persons with H1N1 influenza are contagious for up to seven days after the onset of illness and possibly longer if they are still symptomatic.

Anyone with these symptoms should protect themselves and others by:

- Staying home from work or school and limiting their contact with others to keep from infecting them.
- Calling their health care providers or their health department before seeking care so that the necessary infection control measures can be put in place.
- Covering their nose and mouth with a tissue when they cough or sneeze and throwing the tissue in the trash after use.
- Washing their hands **<u>often</u>** with soap and water, especially after they cough or sneeze. Alcohol-based hand cleaners also are effective.
- Limiting close contact with sick people
- Preventing the spread of germs by not touching eyes, nose or mouth

Appendix E

For more information, visit:

Virginia Department of Health: http://www.vdh.state.va.us/

American Red Cross: Preparing for a Swine Flu Pandemic

CIDRAP's Personal Preparedness Resource List

CIDRAP's Promising Practices include:
Ready in 3
Disaster Readiness Tips for People with Disabilities
Ready or Not? Have a Plan
Providing Care at Home During a Pandemic

Pandemicflu.gov: Plan and Prepare

Pandemicflu.gov: Pandemic Flu Planning Checklist for Individuals and Families

Pandemicflu.gov: Faith-Based & Community Organizations Pandemic Influenza Preparedness Checklist

World Health Organization: Guidance for Communities

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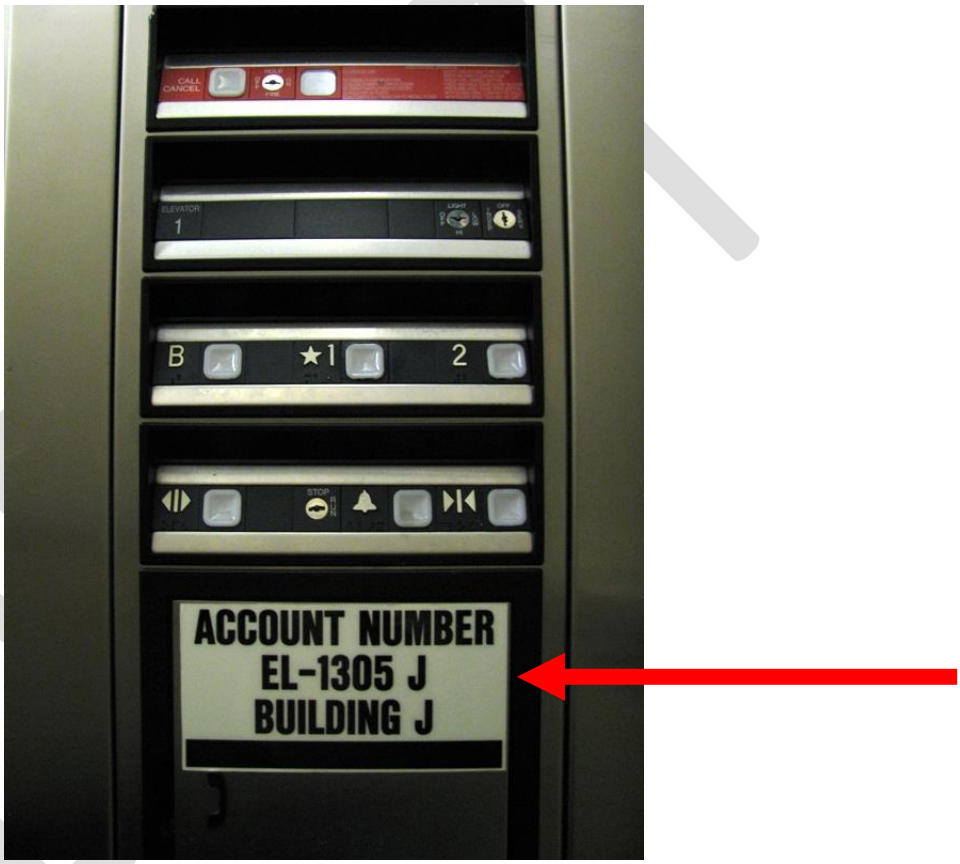
Person Trapped in an Elevator

Introduction

AlexRenew's elevator phones are monitored by Simplex. If you are trapped or have an emergency in an elevator pick up the receiver in Building G or push the button on the phone in Buildings J or L. The phone will dial automatically.

When the Simplex operator answers they will ask for the account number. The account number is on a sign on the door to the phone cabinet in Buildings J & L and next to the phone in Building G.



If there is a medical emergency within the elevator the Simplex operator will call the City Fire Dept. and then AlexRenew. If there is no medical emergency the Simplex operator will call AlexRenew only. They will not call the fire department.

Instructions for the AlexRenew Rescue Team.

1. Go to, or have someone go to the closest elevator door to where the person is trapped.
2. Recheck with the person in the elevator to be sure there is no medical emergency. If there is a medical emergency call 9-911 immediately to inform the dispatcher of the situation.
3. Assure the person that steps are being taken to get them out of the elevator as quickly as possible. Have someone remain at the door who will continually communicate with the person trapped in the elevator.
4. Attempt to reset the electrical disconnect for the elevator in the following areas:

Building	Floor	Room Number	Room Name	Motor Control Center
Building G	1st Floor	G1-126	Electrical Room	MA-1
Building J	Basement	J-B07	HVAC Mechanical Room	MCC-J-4C
Building L	7th Floor	L-702	Electrical Room No. 3	MCC-L-2C

5. If the elevator does not reset call 9-911 for assistance.
6. Complete an Incident Record and Resolution Report. Copy everyone listed on the form with a copy to the Team Leader responsible for the building where the incident accrued.

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Recognizing and Handling Suspicious Packages or Envelopes

Purpose:

Between September and October 2001, several letters containing *Bacillus anthracis* were sent through the mail in several areas of the United States. As a result, the Centers for Disease Control (CDC) developed the following guidelines for recognizing and handling suspicious packages. Although there have been no recent mail-related anthrax exposures, all AlexRenew staff should take appropriate steps to protect themselves and others from exposure to *Bacillus anthracis* or other dangerous substances by following these guidelines for recognizing and handling suspicious packages.

Identifying Suspicious Packages and Envelopes

Some characteristics of suspicious packages and envelopes include the following:

- **Inappropriate or unusual labeling**
    1. Excessive postage
    2. Handwritten or poorly typed addresses
    3. Misspellings of common words
    4. Strange return address or no return address
    5. Incorrect titles or title without a name
    6. Not addressed to a specific person
    7. Marked with restrictions, such as “Personal,” “Confidential,” or “Do not x-ray”
    8. Marked with any threatening language
    9. Postmarked from a city or state that does not match the return address
- **Appearance**
    1. Powdery substance felt through or appearing on the package or envelope
    2. Oily stains, discolorations, or odor
    3. Lopsided or uneven envelope
    4. Excessive packaging material such as masking tape, string, etc.
    5.
- **Other suspicious signs**
    1. Excessive weight
    2. Ticking sound
    3. Protruding wires or aluminum foil

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CAUTION: If a package or envelope appears suspicious, DO NOT OPEN IT.

Handling of Suspicious Packages or Envelopes

- Do not shake or empty the contents of any suspicious package or envelope.
- Do not carry the package or envelope, show it to others or allow others to examine it.
- Put the package or envelope down on a stable surface; do not sniff, touch, taste, or look closely at it or at any contents which may have spilled.
- Alert others in the area about the suspicious package or envelope. Leave the area, close any doors, and take actions to prevent others from entering the area. If possible, shut off the ventilation system.
- WASH hands with soap and water to prevent spreading potentially infectious material to face or skin. Seek additional instructions for exposed or potentially exposed persons.
- If at work, notify a supervisor and law enforcement officials at 9-911. If at home, contact the local law enforcement agency.

If possible, create a list of persons who were in the room or area when this suspicious letter or package was recognized and a list of persons who also may have handled this package or letter. Give this list to the supervisor, Safety Coordinator, local public health authorities and law enforcement officials

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Shelter-in-Place

Shelter-in-Place may be required if there is a tornado, outside airborne hazard, or other hazard. A battery powered NOAA radio is located on the 4th floor of the Environmental Center. In the event of a tornado warning the appropriate warning alarm will sound. Employees should seek shelter at the designated severe weather locations. First aid kits will be maintained at each severe weather shelter locations. Employees should not leave the designated shelter locations until the all clear has sounded. Following the tornado, it may be necessary to activate the Incident Command System based on the amount of damage to the facility. All employees should check in with their designated group so they can be accounted for on their applicable rooster. The facility will be surveyed and a list of all equipment that appears to be out of service will be made and prioritized.

Notification Procedures

In the event of an emergency, visual and audible alarms will activate. A programmed recording instructs occupants to proceed to the shelter-in place location. Notification to employees is done using the employee notification system. The employee notification system can send out a pre-recorded message or the speaker can be used to issue a custom message.

Each department is responsible to assist those that are handicapped or for some other reason cannot evacuate the area on their own. Critical plant operations can be run from remote locations therefore all employees are expected to evacuate immediately.

Airborne Hazard

If warned to “shelter-in-place” from an outside airborne hazard, a warning will be broadcast and all employees should move to shelter. Personnel outside should be directed to enter the building and all exterior doors should be closed. The ventilation system should be shut down and the air intakes closed.

Accounting for Employees

To account for employees during an emergency, AlexRenew employees are divided into the following groups; Operations, Maintenance (Electrical), Maintenance (Mechanical), EC staff (divided by floor) and Laboratory. Contractors and visitors will be accounted for by their AlexRenew point of contact. Each group will have an assembly area Monitor to account for evacuees at the assembly area and inform the Incident Commander if anyone is missing or injured. An employee rooster is used to account for employees within each group.

Each employee is responsible for contacting their supervisor during a declared emergency. All employees are responsible for reporting to their designated reporting area, if the incident warrants, and will remain there until the all clear sounds or a member of leadership directs them to do so. The highest level of leadership or his/her designee will coordinate to identify for any unaccounted for personnel, contractors or visitors.

Assembly Points

When the ENS provides an announcement to take shelter, employees within the plant vicinity should proceed to L and J building basements. If someone is unable to safely proceed to the L or J building they should proceed to the nearest building with access to the plant tunnels. Employees, contractors and visitors occupying the EC building shall shelter in place in the fish room.

Follow-up and Drills

Based on the emergency it may be necessary to activate the Incident Command Center or notify additional outside agencies. See the contact sheet for a list of agency contacts.

Incidents, drills and exercises should be documented on an Evacuation Report form. A critique of the evacuation should be done within 24-hours of the drills and/or incidents to identify lessons learned and action items to improve. The critique shall be performed by the Safety Coordinator with others participating as needed. Items to consider when conducting the review.

- Effectiveness – did personnel move to their shelter-in-place locations?
- Alarm effectiveness – was it heard/seen – was it understood?
- Was the correct assembly area used? – Does the location of the assembly areas make sense based on hazards?
- How were off-site personnel accounted for?
- Did personnel report-in properly?
- How effective was the sign-in sheet to account for personnel?
- Evaluate duties and performance of those operating critical equipment.
- Evaluate communication.

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Emergency Employee Rooster

Date:	Time:	Department/Shift:
Name	**Initial by your name**	

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Emergency Drill and Incident Report

Date of the Event:_____ Time:_____

Amount of time for all employees to get to shelter?_____
Amount of time for all employees to be accounted for:_____
Brief Description of the Incident:_____

What went well?_____

What Needs Improvement?_____

Action	Risk Rank	Responsible Party	Due Date

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Suspicious Persons or Activities

Purpose:

The purpose of these written procedures are to establish guidelines for AlexRenew staff to follow in the event a suspicious person or activity is detected on the plant, at a pump station or noticed along the collection systems. These procedures are intended to eliminate injuries of AlexRenew staff, visitors and contractors and to protect the Authorities assets.

1. It is impossible to define every situation and explain all actions that are needed on the part of everyone involved in the incident. Quick thinking and common sense on the part of those staff that are involved is critical. Remember: The situation of an unwanted person on AlexRenew property may escalate at any time becoming dangerous to all. Lean on the side of safety.

2. AlexRenew staff are not to approach and must move away from any person that seems to be angry, argumentative, show signs of aggression, appears to be unstable in any way or appears to have a weapon. Call 9-911 in any of the previous listed cases or if you feel threatened in any way.

Definitions of Suspicious Person or Activities

Examples of suspicious persons or activities are listed below. This is not intended to be an all inclusive list. Common sense should prevail.

1. Any person including an employee that is displaying or hiding a weapon that is not authorized on AlexRenew property as listed in AlexRenew's Personnel Policies and Procedures Manual, Policy E-1, Workplace Facilities, Services and Rules.
2. A person that approaches you whom has no valid business on the plant and will not depart the facility voluntarily.
3. Any violent person or one that shows signs of aggression, including employees.
4. Any person that shows signs of anger, irritation, resentment or annoyance with your presence.
5. Any person that appears to be stealing or damaging AlexRenew property or the property of AlexRenew staff or contractors on site.
6. Any person showing uncommon interest in security measures or personnel entry points or access controls, or perimeter barrier such as fences or walls.
7. Any person showing uncommon interest in critical infrastructure/key resources facilities, networks or systems (including photographing or videotaping assets.)
8. Any person near critical infrastructure or key facilities who does not fit the surrounding environment including off-duty and previous AlexRenew employees,
9. Individuals wearing improper attire for conditions.
10. Individuals not authorized to be present on plant grounds such as homeless persons, street vendors or demonstrators.

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Procedures

All AlexRenew employees are expected to take the appropriate actions to protect AlexRenew staff and the AlexRenew's assets. Everyone should follow the guidelines in Notes 1 through 6 below whenever they notice a suspicious person on AlexRenew property. Anyone that may feel intimidated or reluctant to approach the suspicious person for any reason must immediately contact a person in a leadership position to handle the situation. The important thing to keep in mind is not to ignore the suspicious person's presence. You are responsible to take action to insure only authorized persons are on AlexRenew property:

1. Approach the person politely and ask if you can help them. If it is found that they have no business on AlexRenew property, politely inform them that they are on private property and show them the way off the plant. If they indicate they have business on AlexRenew property, verify with the AlexRenew contact person.
2. If the person(s) departs as instructed watch to see that they actually leave the facility. Take note of anything that may be helpful in locating the person in the future if needed, for example: vehicle license number and state, make, model, year and color, and a good description of the person(s).
3. If they refuse to leave, become angry, argumentative, or show signs of aggression simply back off and call 9-911. Inform the police dispatcher that a person with a (describe the attitude) is on private property and refuses to leave and you request assistance. DO NOT HESITATE TO MAKE THE CALL TO THE POLICE.
4. It must be understood by all AlexRenew staff that they not only have the right to call for outside assistance (9-911…police or fire) but they are responsible to make the call in times of emergency.
5. Contact the Shift Leader on duty immediately then contact the Safety Coordinator.
6. Complete an Incident Record and Resolution Report to document the event and actions taken

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ERGONOMIC PROGRAM: COMPUTER WORK STATIONS & WORK ENVIRONMENTS

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ALEXANDRIA RENEW ENTERPRISES

1/15/2020

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Ergonomic Program: Computer Work Stations & Work Environments

I. Introduction:

The following information and recommendations are from the National Safety Council (NSC), Federal Food and Drug Administration (FDA), and the National Institute of Occupational Safety and Health (NIOSH).

Additional guidance on the following procedures can be obtained from the Safety Coordinator.

II. Computer Work Station:

A. Keyboard:

1. Height

The correct height of a keyboard allows the computer operator's upper and lower arms to be at a 90-degree angle. If this angle is more than 15% either way, one study estimates that as much as a 50% loss of productivity may occur. The incorrect height can cause pain in the shoulders, back, arms, and wrists.

2. Angulation:

Incorrect angulation of elevation of the keyboard can cause pain of the wrists and fingers. The keyboard should be elevated in the rear approximately 2 1/2 inches that places the operator's wrist at a slight natural angle. Elevating the keyboard should allow the computer operator's wrists to rest on the work surface. Should the work surface become uncomfortable, it may be more comfortable to use a wrist pad (Wrist Saver). If the keyboard is not adjustable, placing a sturdy object (piece of wood, paper, book, etc.) under the rear should be sufficient.

3. Position:

The keyboard should be positioned directly in front of the computer operator. Putting the keyboard to either side of the computer operator causes twisting of the upper body that causes fatigue, pain of the neck, shoulders, and back.

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4. Wrist Pad:

The use of a wrist pad is important. The purpose of a wrist pad is to support the hands, wrists, arms, shoulders, and upper back. Without a wrist pad, employees may complain of pain and tension to parts of the body already mentioned. In order to increase productivity while enhancing the posture of employees, a wrist pad should be used. Employees who are not accustomed to wrist pads will generally object to using them. The employees should understand that this change is for their well being and that familiarization of the wrist pad will take time. In essence, it is an attitude change.

B. Visual Display Terminal (VDT):

1. Height

The correct height of the VDT screen is very important. The top of the screen should be at eye level. If the screen is lower than the recommended height, the computer operator is forced to look downward which causes fatigue, stress, and aches of the neck, back, etc. Raising the height of the VDT terminal can be accomplished by placing unused books, files, etc. under the screen. By raising the screen, this will allow the computer operator to sit with correct body posture.

2. Angulation:

Recent studies have shown that it is better to eliminate any angulation of the screen. If the screen is tilted or angled backwards, it can cause a reflective glare on the screen by the overhead lights, windows, etc. Therefore, the screen should not be tilted or angled.

3. Position:

The VDT should be directly in front of the computer operator. The document and keyboard should also be directly in front of the computer operator. Positioning the computer station in this manner eliminates considerably undue turning and twisting, which reduces fatigue, stress, strains, and pain of the eyes, neck, shoulders, back and arms.

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4. Distance:

   The correct viewing distance should be 18 to 24 inches. Any computer operator, who is closer or farther than the recommended distance, could experience headaches, fatigue, stress, and place undue strain on the eyes.

5. Brightness:

   The cathode ray tube (CRT) should have a brightness control knob. If reflective glare is on the CRT screen, the brightness control can help relieve, reduce or possibly eliminate the glare.

6. Image:

   Because computers are relatively new, worn or out-dated parts have not become a problem. In time, the phosphorous lining which covers the inside of the CRT screen wears out and causes non-sharp images; to eliminate undue stress and strain to the eyes, the screens should be replaced every few years.

7. Color:

   Color terminals are preferred rather than mono-terminals because they are easier and softer on the eyes. When replacing a terminal, keep in mind that color terminals help to reduce stress, strain and general fatigue on the body.

8. Screen:

   Cleanliness of the screen is important. In the event the screen is not kept clean, employees are forced to strain their eyes in order to read the images. This eyestrain also causes aches of the head, neck, and back. A clean screen will produce less strain on the employee and improve productivity.

C. Chair:

The most important component of computer equipment is the chair. In many instances, several employees operate the same terminal. In light of this fact, the pneumatic type chair is recommended because of its adjustability.

1 Height:

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The following measurement procedure is used to determine the correct height of the chair:

(a.) Sit with the soles of your shoes flat on the floor. Keep your shins perpendicular to the floor and relax your thigh muscles.
(b.) Measure the distance from the hollow of the knees to the floor.
(c.) Subtract 1 to 3 inches.
(d.) The resulting measurement is the correct height for the top of the chair seat.

(2) When you don't feel excessive pressure on your legs from the edge of the seat, the chair is at a comfortable working height. Pressure from the seat's front edge cause loss of circulation in the legs, causing a loss of productivity and so forth. When seated, the purpose of your thigh (femur) muscles is to support your upper body weight. The average adult has approximately over one hundred (100) pounds of upper body (torso) weight. When an employee sits too high, the thigh muscles do not support the upper body weight. When this occurs, the lower back muscles are forced to support the upper body, resulting in lower back complications. In one study, the majority of employees who sit too high in their chairs experienced lower back pain. Approximately 25% to 30% of these employees had serious back problems. Insist that employees sit one (1) to three (3) inches lower (top seat buttocks measurement) from the hollow of the knee measurement.

2 Adjustability:

As stated earlier, the adjustability of the chair is very important, especially if two (2) or more employees use the same chair. If the chair is not easily adjustable, employees will instinctively use the chair as found. If the chair is not the correct height for the staff member then aches and pain of the feet, legs, and lower back will probably occur, resulting in lost of productivity.

3. Backrest:

The backrest should fit comfortably at the lower back (lumbar) in order to have good back support. Again, the backrest must be easily adjustable as for the reasons previously stated. A backrest that is improperly positioned can cause stress, strain, and fatigue to

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the shoulders and neck.

4. Arm Rest

Arm rests were designed to support the arms, shoulders, and upper back. Some arm rest chairs do not permit the staff member to get close to their desks due to blockage from the arm rests. However, with careful preparation and foresight, in most cases, the correct arm rest chairs can be obtained.

5. Stability

Older chairs with four (4) supporting legs are unstable and have a greater tendency to tip over while being occupied than chairs with five (5) legs.

D. Foot Rest

1. Availability/Applicability

Should any changes be made to the VDT workstation, adjustments may be required to compensate for the change. For example, if your desk is too high, you will probably have to raise your chair beyond the recommended height to be in the right position. Unfortunately, your legs may dangle. If this occurs, you will need a foot rest to minimize pressure from the seat's front edge on your legs. The usage of the foot rest should reduce or eliminate aches and pains of the legs and feet and increase productivity.

E. Document:

1. Height/Position

The document should not be to the side lying flat on the desk. This position causes the computer operator to consistently turn their head and refocus their eyes, which places undue stress on the eyes, neck, shoulders, and upper back. Headaches are also quite common. In order to eliminate these symptoms, it is preferred to place the document that the computer operator is reading from to the side of the VDT screen at the same height as the CRT. The document holder should be placed the same distance as that of the screen. When this position is achieved, the re-focusing and re-

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adjusting of the computer operator's eyes will be eliminated. Therefore, employee complaints of eye strain should be reduced or eliminated.

F. Desk:

1. Height:

The desk height should be the same as for the keyboard, which allows a 90-degree angle of the upper and lower arms. In the event the desktop is too low, a new desk is not needed, simply raise the desk and place blocks of wood under the legs. This procedure should be sufficient. Should the desk height be too high, raise the operator's chair and utilize a footrest.

III. Work Environment:

A. Noise

In the office environment, there are many causes of noise (telephones, loud conversations, printers, radios, noisy equipment, etc.). What may be music to one person may possibly be noise to another. Therefore, in an open office environment employees should be considerate of each other. Another method of controlling noise is by isolating or absorbing the noise with portable partitions. This method is very effective because of its absorption properties, and it creates a quieter office for the employees. Another method of partitioning noise is relocating file cabinets, etc.

B. Lighting:

1 Lighting can enhance or hinder an employee's working environment. There are many concerns pertaining to this subject, such as (1) type of lighting, (2) location of lighting, (3) location of VDT. Due to these concerns, one type of lighting or control of lighting may be preferred over another. Should the office be rearranged, the lighting could change dramatically. If you feel that the lighting is not adequate or is more than adequate, consider rearranging the furniture. Computer environments are different from the standard office environment - the lighting and arrangements of the VDT terminal must be controlled in order to eliminate reflective glare. Because a VDT incorporates its own light source, the ambient lighting can be slightly dimmer than usual office lighting. Generally speaking, most VDT work areas

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should have a lower lighting environment. This reduction in lighting usually reduces or eliminates reflective glare and enhances the sharpness of the images on the CRT screen. Unfortunately, computer operators have become accustomed to bright office lighting, so reducing the lighting will probably create complaints. The reduced lighting is for the employee's benefit and in time they will become accustomed and welcome the new change. In computer environment, 20 to 50-foot candle power is preferred. In an office environment, a 70 to 100-foot candle power is preferred.

2 In review, the correct order of controlling the lighting in the computer work area is: (1) rearrange or relocate the computer work station, (2) reduction of lighting.

C. Windows:

Everyone wants a window near their workstation. However, windows are one of the greatest causes of glare. When operating the VDT terminal, closed window blinds should eliminate any glare. Whenever the operator takes a break, the window blinds can be reopened. Also, repositioning the VDT terminal so that it is perpendicular to the window may eliminate the nuisance glare.

E. Glare:

Glare is undoubtedly a nuisance and troublesome factor for the computer operator. The majority of CRT screens will have some type of nuisance glare. When glare appears on the CRT, the computer operator must adjust their eyes and reposition themselves in order to reduce or eliminate the glare. Due to constantly refocusing the eyes and repositioning the body, glare causes stress, fatigue, and aches of the head, eyes, neck, shoulders, back, and arms.

Overhead lighting is another contributor of glare. In many cases, if the overhead lighting is the cause of glare, attaching a piece of cardboard or similar object on top of the VDT terminal with a few inches of overhang may eliminate the glare. Every effort should be made to eliminate glare. In eliminating the nuisance glare, the work environment will be more pleasant, healthier, and more productive.

1. Reflective

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Reflective glare is a result of a window or an overhead light causing bright spots on the VDT screen. The glare decreases the contrast between the characters and their background, so the computer operator is forced to strain in order to read the screen. Suffering visual fatigue and changing positions the computer operator then begins to struggle from poor posture.

2. Discomfort

Discomfort glare is produced by a light source in the field of view. It is usually caused by light fixtures or by daylight coming through the window, and it makes the screen difficult to see. Discomfort glare covers the entire screen, while reflective glare causes bright spots on the screen. As computer operators get older, they tend to become more sensitive to discomfort glare, due to the eye strain.

3. Disability

Disability glare is produced when an intense light shines directly into the operator's eyes. It usually occurs from placing the VDT terminal in front of a window or aligning the terminal with overhead light fixtures. When the light enters the eyes, it reduces the amount of contrast the computer operator can perceive, making it difficult to read the screen.

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EXPOSURE CONTROL PLAN/BLOODBORNE PATHOGENS

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SECTION I

PURPOSE OF THE PLAN

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PURPOSE OF THE PLAN

One of the major goals of the Occupational Safety and Health Administration (OSHA) is to regulate facilities where work is carried out… to promote safe work practices in an effort to minimize the incidence of illness and injury experienced by employees. Relative to this goal, OSHA has enacted the Bloodborne Pathogens Standard, codified as 29 CFR 1910.1030. The purpose of the Bloodborne Pathogens Standard is to "reduce occupational exposure to Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV) and other bloodborne pathogens" that employees may encounter in their workplace.

Alexandria renew Enterprises believes there are a number of good general principles that should be followed when working with bloodborne pathogens. These include:

- It is prudent to minimize all exposure to bloodborne pathogens.
- Risk of exposure to bloodborne pathogens should never be underestimated.
- Our facility should institute as many work practice and engineering controls as possible to eliminate or minimize employee exposure to bloodborne pathogens.

We have implemented this Exposure Control Plan to meet the letter and intent of the OSHA Bloodborne Pathogens Standard. The objective of this plan is twofold:

1) To protect our employees from the health hazards associated with bloodborne pathogens.

2) To provide appropriate treatment and counseling should an employee be exposed to bloodborne pathogens.

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SECTION II

GENERAL PROGRAM MANAGEMENT

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GENERAL PROGRAM MANAGEMENT

A. RESPONSIBLE PERSONS

There are four major "Categories of Responsibility" that are central to the effective implementation of our Exposure Control Plan. These are:

1) The "Exposure Control Officer".

2) Department Managers and Supervisors.

3) Education/Training Instructors.

4) Our Employees.

The following sections define the roles played by each of these groups in carrying out our plan. (Throughout this written plan, employees with specific responsibilities are identified. If, because of promotion or other reasons, a new employee is assigned any of these responsibilities, the Director of Human Resources is to be notified of the change, so they can update their records.)

EXPOSURE CONTROL OFFICER

The "Exposure Control Officer" will be responsible for overall management and support of our facility's Bloodborne Pathogens Compliance Program. Activities which are delegated to the Exposure Control Officer typically include, but are not limited to:

- Overall responsibility for implementing the Exposure Control Plan for the entire facility.
- Working with management, other employees, and contracted labor to develop and administer any additional bloodborne pathogens related policies and practices needed to support the effective implementation of this plan.
- Looking for ways to improve the Exposure Control Plan, as well as to revise and update the plan when necessary.

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- Collecting and maintaining a suitable reference library on the Bloodborne Pathogens Standard and bloodborne pathogens safety and health information.

- Knowing current legal requirements concerning bloodborne pathogens and communicate plan and policy to contracted labor companies.

- Acting as facility liaison during OSHA inspections.

- Conducting periodic facility audits to maintain an up-to-date Exposure Control Plan.

The Safety Coordinator has been appointed as the facility's Exposure Control Officer.

We have determined that the Exposure Control Officer will require assistance in fulfilling his/her responsibilities. To assist him/her in carrying out these duties, we have created an Exposure Control Committee composed of the following people:

EXPOSURE CONTROL COMMITTEE

HR Manager

Maintenance Manager

Operations Manager

DEPARTMENT MANAGERS AND SUPERVISORS

Department Managers and Supervisors are responsible for exposure control in their respective areas. They work directly with the Exposure Control Officer and our employees to ensure that proper exposure control procedures are followed.

EDUCATION/TRAINING

The HR Manager/Safety Coordinator will be responsible for providing information and training to all employees who have the potential for exposure to bloodborne pathogens. Activities falling under the direction of the Coordinator include:

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- Maintaining an up-to-date list of facility personnel requiring training (in conjunction with facility management).
- Developing suitable education/training programs.
- Scheduling periodic training seminars for employees.
- Maintaining appropriate training documentation such as "Sign-in-Sheets", Quizzes, etc.
- Periodically reviewing the training programs with the Department Managers and Supervisors to include appropriate new information.

EMPLOYEES

As with all our facility's activities, our employees have the most important role in our bloodborne pathogens compliance program, for the ultimate execution of much of our Exposure Control Plan rests in their hands. In this role they must do things such as:

- Know what tasks they perform that have occupational exposure.
- Attend the bloodborne pathogens training sessions.
- Plan and conduct all operations in accordance with our work practice controls.
- Develop good hygiene habits.

B. AVAILABILITY OF THE EXPOSURE CONTROL PLAN TO EMPLOYEES

To help them with their efforts, our facility's Exposure Control Plan is available to our employees at any time. Employees are advised of this availability during their education/training sessions. Copies of the Exposure Control Plan are kept in the following locations:

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- SharePoint Intranet Website
- Safety Coordinator Office

C. REVIEW AND UPDATE OF THE PLAN

We recognize that it is important to keep our Exposure Control Plan up-to-date. To ensure this, the plan will be reviewed and updated under the following circumstances:

- Annually
- Whenever new or modified tasks and procedures are implemented which affect occupational exposure of our employees.
- Whenever our employees' jobs are revised such that new instances of occupational exposure may occur.
- Whenever we establish new functional positions within our facility that may involve exposure to bloodborne pathogens.

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SECTION III

EXPOSURE DETERMINATION

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EXPOSURE DETERMINATION

One of the keys to implementing a successful Exposure Control Plan is to identify exposure situations employees may encounter. To facilitate this in our facility, we have prepared the following lists:

- Job classifications in which **all** employees have occupational exposure to bloodborne pathogens.
- Job classifications in which **some** employees have occupational exposure to bloodborne pathogens.
- Tasks and procedures in which occupational exposure to bloodborne pathogens occur (these tasks and procedures are performed by employees in the job classifications show on the two previous lists).

The Safety Coordinator will work with department managers and supervisors to revise and update these lists as our tasks, procedures and classifications change.

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JOB CLASSIFICATIONS IN WHICH SOME EMPLOYEES HAVE EXPOSURE TO BLOODBORNE PATHOGENS

Below are listed the job classifications in our facility where **some** employees may come into contact with human blood or other potentially infectious materials, which may result in possible exposure to bloodborne pathogens:

JOB TITLE	DEPARTMENT/LOCATION
First Aid Responder	**Various (See Attachment)**

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WORK
ENGINEERING CONTROL EQUIPMENT

The following operations have, or should have, Engineering Control Equipment to eliminate or minimize our employees' exposure to bloodborne pathogens. If equipment is needed but not yet available "None" is indicated in the "Control Equipment" column.

DEPARTMENT/OPERATION	CONTROL EQUIPMENT
Sanitation Cleaning	Trash Containers, Cleaning Fluid, Face Shields, Absorbent, Brush, Dust Pan
Plant Restrooms	Trash Containers
Buildings J, G, L First Aid Cabinets	Gloves, Aprons, Goggles,
General Wastewater Treatment Operations	Gloves, Aprons, Goggles, Face-shields, Tyvek Coveralls, Rubber Boots

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In addition to the engineering controls identified on these lists, the following engineering controls are used throughout our facility:

Hand-Washing Facilities (or antiseptic hand cleansers and towels or antiseptic towelettes), which are readily accessible to all employees who have the potential for exposure.

C. WORK PRACTICE CONTROLS

In addition to engineering controls, our facility uses a number of Work Practice Controls to help eliminate or minimize employee exposure to bloodborne pathogens. Many of these Work Practice Controls have been in effect for some time.

The person in our facility who is responsible for overseeing the implementation of these Work Practice Controls is the (S) He works in conjunction with department managers, supervisors and our facility's training coordinators to effect this implementation.

Our facility has adopted the following Work Practice Controls as part of our Bloodborne Pathogens Compliance Program:

- Employees wash their hands immediately, or as soon as feasible, after removal of potentially contaminated gloves or other personal protective equipment.

- Following any contact of body area with blood or any other infectious materials, employees wash their hands and any other exposed skin with soap and water as soon as possible. They also flush exposed mucous membranes with water.

- Eating, drinking, smoking, applying cosmetics or lip balm and handling contact lenses is prohibited in work areas where there is potential for exposure to bloodborne pathogens.

- Equipment, which becomes contaminated, is examined prior to servicing and decontaminated as necessary (unless it can be demonstrated that decontamination is not feasible).

    - An appropriate biohazard warning label is attached to any contaminated equipment, identifying the contaminated portions.

    - Information regarding the remaining contamination is conveyed to all affected employees, the equipment manufacturer and the equipment service representative prior to handling or servicing.

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When a new employee comes to our facility, or an employee changes jobs within the facility, the following process takes place to ensure that they are trained in the appropriate work practice controls.

The employee's job classification and the tasks and procedure that they will perform are checked against the Job Classifications and Task Lists which we have identified in our Exposure Control Plan as those in which occupational exposure occurs.

If the employee is transferring from one job to another within our facility, the job classifications and tasks/procedures pertaining to their previous position are also checked against these lists.

Based on this "cross-checking" the new job classifications and/or tasks and procedures, which will bring the employee into occupational exposure situations, are identified.

The employee is then trained by the facility Training Coordinator or another instructor regarding any work practice controls that the employee is not experienced with.

D. PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment is our employees' *"last line of defense"* against bloodborne pathogens. Because of this, our facility provides (at no cost to our employees) the Personal Protective Equipment that they need to protect them against such exposure. This equipment includes, but is not limited to:

Gloves
Safety Glasses
Goggles
Face Shields/Masks
Filtering face Piece Devices
Tyvek Coveralls
Rubber Boots

Hypoallergenic gloves, glove-liners and similar alternatives are readily available to employees who are allergic to the gloves our facility normally uses.

The Safety Coordinator working with department managers and supervisors, is responsible for ensuring that all departments and work areas have appropriate personal protective equipment available to employees.

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Our employees are trained regarding the use of the appropriate personal protective equipment for their job classifications and task/procedures they perform. Initial training about personal protective equipment has been completed. Additional training is provided, when necessary, if an employee takes a new position or new job functions are added to their current position.

To determine whether additional training is needed the employee's previous job classification and tasks are compared to those for any new job or function that they undertake. Any needed training is provided by their department manager or supervisor working with our facility's Training Coordinator.

To ensure that personal protective equipment is not contaminated and is in the appropriate condition to protect employees from potential exposure, our facility adheres to the following practices:

- All personal protective equipment is inspected periodically and repaired or replaced as needed to maintain its effectiveness.
- Reusable personal protective equipment is cleaned, laundered and decontaminated as needed.
- Single-use personal protective equipment (or equipment that cannot, for whatever reason, be decontaminated) is disposed of in our Bio-waste collection container.

To make sure that this equipment is used as effectively as possible, our employees adhere to the following practices when using their personal protective equipment:

Any garments penetrated by blood or other infectious materials are removed immediately, or as soon as feasible.

All potentially contaminated personal protective equipment is removed prior to leaving a work area.

Gloves are worn in the following circumstances:

- Whenever employees anticipate hand contact with potentially infectious materials.
- When handling or touching contaminated items or surfaces.

Disposable gloves are replaced as soon as practical after contamination or if they are torn, punctured or otherwise lose their ability to function as an "exposure barrier".

Utility gloves are decontaminated for reuse unless they are cracked, peeling, torn or exhibit other signs of deterioration, at which time they are disposed of.

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Masks and eye protection, such as goggles, are used whenever splashes or sprays may generate droplets of infectious materials.

Protective clothing (such as coats) is worn whenever potential exposure to the body is anticipated.

E. HOUSEKEEPING

Maintaining our facility in a clean and sanitary condition is an important part of our Bloodborne Pathogens Compliance Program. To facilitate this, we have set up a written schedule for cleaning and decontamination of the appropriate areas of the facility. The schedule provides the following information (this schedule can be found on the following page).

The area to be cleaned/decontaminated.

Day and time of scheduled work.

Cleansers and disinfectants to be used.

Any special instructions that are appropriate.

Using this schedule, our janitorial/cleaning staff employs the following practices:

All equipment and surfaces are cleaned and decontaminated after contact with blood or other potentially infectious materials:

Immediately (or as soon as feasible) when surfaces are overtly contaminated.

At the end of the work shift if the surface may have been contaminated during that shift.

Protective coverings (such as plastic trash bags or wrap, aluminum foil or absorbent paper) are removed and replaced:

As soon as it is feasible when overtly contaminated.

At the end of the work shift if they may have been contaminated during that shift.

All trash containers, pails, bins and other receptacles intended for use routinely are inspected, cleaned and decontaminated as soon as possible if visibly contaminated.

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Potentially contaminated broken glassware is picked up using mechanical means (such as dustpan and brush, tongs, forceps, etc.).

Safety Coordinator is responsible for setting up our cleaning and decontamination schedule and making sure it is carried out within our facility.

We are also very careful in our facility in handling regulated waste (including used bandages, feminine hygiene products and other potentially infectious material(s). The following procedures are used with all of these types of wastes:

They are discarded or "bagged" in containers that are:

- Closeable
- Puncture-resistant if the discarded materials have the potential to penetrate the container.
- Leak-proof if the potential for fluid spill or leakage exists.
- Red in color or labeled with the appropriate biohazard warning label.

Containers for this regulated waste are placed in appropriate locations in our facility within easy access of our employees and as close as possible to the sources of the waste.

Waste containers are maintained upright, routinely replaced and not allowed to overfill.

Contaminated laundry is handled as little as possible and is not sorted or rinsed where it is used.

Whenever our employees move containers of regulated waste from one area to another the containers are immediately closed and placed inside an appropriate secondary container if leakage is possible from the first container.

Maintenance/Operations Supervisor is responsible for the collecting and handling biological waste

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FALL PROTECTION

(29 CFR 1910.20)
(29 CFR 1926.500)

ALEXANDRIA RENEW ENTERPRISES

1/15/2020

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SAFETY STANDARD OPERATING PROCEDURES
ALEXANDRIA RENEW ENTERPRISES (AlexRenew)

Fall Protection

SCOPE:

This program sets forth requirements and criteria for fall protection at AlexRenew using CFR 29 1910. 20 and the construction standard 29 CFR part 1926.500 as a guide.

The effectiveness of the written fall protection procedures depends upon the active support and involvement of all employees who work with procedures and jobs requiring it. This written plan is intended to be used in implementing procedures to ensure that work with fall protection is carried out safely to minimize the possibility of injury or harm to our employees.

These written fall protection procedures establish uniform requirements designed to ensure that fall protection operations, and practices are communicated to and understood by the affected employees. These requirements are also designed to ensure that procedures are in place to safeguard the health and safety of all AlexRenew staff.

It is the policy of Alexandria Renew Enterprises to permit only employees trained in fall protection procedures to work in areas where fall hazards exist, to reduce likelihood of fall accidents and to help ensure a safe workplace.

I. Definitions.

Anchorage	means a secure point of attachment for lifelines, lanyards or deceleration devices.
Body harness	means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
Buckle	means any device for holding the body belt or body harness closed around the employee's body.
Connector	means a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system or body harness (such as a buckle or Dee-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

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Controlled access zone (CAZ)	means an area in which certain work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.
Dangerous equipment	means equipment (such as tanks, silos, machinery, electrical equipment, and other units in which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.
Deceleration device	means any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
Deceleration distance	means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
Equivalent methods,	means alternative designs, materials, or methods to protect against a hazard which the AlexRenew can demonstrate will provide an equal or greater degree of safety for employees than the materials or designs specified in this program.
Failure	means load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
Free fall	means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.
Free fall distance	means the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

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Guardrail system	means a barrier erected to prevent employees from falling to lower levels.
Hole	means a gap or void 2 inches or more in its least dimension, in a floor, roof, or other walking/working surface.
Lanyard	means a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.
Leading edge	means the edge of a floor, roof, or formwork for a floor or other walking/working surface.
Lifeline	means a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
Lower levels	means those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
Opening	means a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.
Personal fall arrest system	means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. **As of January 1, 1998, the use of a body belt for fall arrest is prohibited.**
Positioning device system	means a body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.
Rope grab	means a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.
Roof	means the exterior surface on the top of a building.

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Safety-monitoring system	means a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.
Self-retracting lifeline/lanyard	means a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.
Snap hook	means a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks are generally one of two types: The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. **As of January 1, 1998, the use of a non-locking snap hook as part of personal fall arrest systems and positioning device systems is prohibited.**
Toeboard	means a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.
Unprotected sides and edges	means any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches high.
Walking/working surface	means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.
Warning line system	means a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge of a walking

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working surface, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

Work area — means that portion of a walking/working surface where job duties are being performed.

II. Fall protection is needed for the following types of work:

A. AlexRenew staff on walking/working surfaces (horizontal and/or vertical surface) with an unprotected side or edge which is four (4) feet or more above a lower level shall be protected from falling by the use of guardrail systems, or personal fall arrest systems.

B. AlexRenew staff at the edge of an excavation four (4) feet or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barriers.

C. AlexRenew staff on walking/working surfaces shall be protected from tripping in or stepping into or through holes (including skylights) by covers.

D. AlexRenew staff on walking/working surfaces shall be protected from objects falling through holes (including skylights) by covers.

E. AlexRenew staff involved in hoisting operations shall be protected from falling four (4) feet or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems (chain, gate, or guardrail) or portions thereof, are moved to facilitate the hoisting operation (e.g. during landing of materials), and an employee must be within ten (10) feet of the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system. The crane on building 44 is a prime example of this condition where personal fall protection must be utilized.

F. AlexRenew staff reaching more than ten (10) inches below the level of the walking/working surface on which they are working, shall be protected from falling by a guardrail system, or personal fall arrest system.

G. AlexRenew staff working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is four (4) feet or more above lower levels shall be protected from falling by a guardrail system, or a personal fall arrest system.

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III. Guardrail systems:

Each AlexRenew staff member on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge that is four (4) feet or more above a lower level shall be protected from falling. Guardrail systems are one means of protecting employees. Furthermore, guardrail systems used need to comply with the following:

A. The top edge height of top rails on guardrails must be at least forty-two (42) inches. However, the height of the top edge may exceed forty-two (42) inches.

B. Midrails need to be installed at a height midway between the top edge of the guardrail system and the walking/working level.

C. Intermediate members such as balusters, additional midrails, and architectural panels, shall be installed such that there are no openings in the guardrail system that are more than eighteen (18) inches wide.

D. Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within two (2) inches of the top edge, in any outward or downward direction, at any point along the top edge.

E. Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

F. Top rails and midrails shall be at least one-quarter inch nominal diameter in thickness to prevent cuts and lacerations.

G. If wire rope is used for top rails, it shall be flagged at not more than six (6) foot intervals with high-visibility material.

H. When guardrail systems are used at hoisting areas, a chain, gate, or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

I. When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.

J. When guardrail systems are used around holes for the passage of material, the hole shall have not more than two sides provided with removable guardrail sections to allow passage of materials. When the hole is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.

K. When guardrail systems are used around holes that are used as points of access (such as

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ladderways), they shall be provided with a gate, chain or be so offset that a person cannot walk directly into the hole.

L. Ramps or runways erected above six feet also require guardrails along each unprotected side or edge.

M. Any guardrail system found not meeting the strength requirements due to poor design, rust, chemical damage, or alteration will be barricaded off immediately. Moreover, the area will remain barricaded off until repair/replacement of the guardrail system is completed.

IV. Personal fall arrest systems:

Each AlexRenew staff member on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge shall be protected from falling. Personal fall arrest systems are a means of protecting an employee. Personal fall arrest systems must meet the following requirements:

A. Lifelines shall be protected against being cut or abraded.

B. Lanyards and vertical lifelines shall have a minimum breaking strength of five thousand (5,000) pounds.

C. Snaphooks and Dee-rings shall have a minimum tensile strength of five thousand (5,000) pounds.

D. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms or equipment and capable of supporting at least five thousand (5,000) pounds per employee attached.

E. Snaphooks that are used in personal fall arrest systems shall be the locking type. **ONLY**

F. Never attach snaphooks directly to webbing, rope, wire rope, to each other, to a dee-ring to which another snaphook or to any other object which is incompatibly shaped and/or dimensioned. In relation to the snaphook, unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

G. All connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system. Connectors shall be drop forged, pressed, or formed steel or made of equivalent materials.

H. Each employee's harness shall be attached to a separate lifeline.

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I. Personal fall arrest systems shall not be attached to guardrail systems, hoists, nor shall they be attached to motor vehicles.

J. Personal fall arrest systems shall be designed to bring an employee to a complete stop and limit maximum deceleration distance an employee travels to three and a half (3.5) feet. This can be accomplished by using a braking system or shock absorber.

K. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level

L. Body harnesses and/or components shall not be used for hoisting materials or equipment.

M. Personal fall arrest systems and components subjected to impact loading (a fall arrest) shall be immediately removed from service and shall not be used again until a qualified vender (manufacturer representative) inspects and determines whether the system and components are suitable for reuse.

N. An emergency response plan for each job site needs to be developed by the supervising team or shift leader to assure AlexRenew employees a prompt rescue in the event of a fall or be able to assure that employees can rescue themselves.

O. Personal fall arrest systems shall be inspected prior to each use for wear, damage, chemical deterioration, or other deterioration, and any defective components shall be reported to the Safety Coordinator. Moreover, defective components shall be removed from service immediately.

P. Body belts **shall not** be used as a part of a personal fall arrest system.

Q. Self-retracting lifelines and lanyards which automatically limit free fall distance to two (2) feet or less shall be capable of sustaining a minimum tensile load of two thousand five hundred (2,500) pounds applied to the device with the lifeline or lanyard in the fully extended position.

R. Self-retracting lifelines and lanyards which do not limit free fall distance to two (2) feet or less, ripstitch lanyards, and also, tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of five thousand (5,000) pounds applied to the device with the lifeline or lanyard in the fully extended position.

V. Positioning device systems:

Positioning devices are used when an employee requires both fall protection and support of an elevated vertical surface. Positioning devices also allow the employee to work with both

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hands free while leaning. Positioning device systems used need to comply with the following:

A. AlexRenew staff must receive training on fall protection positioning devices before using them.

B. Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of the employee's fall or three thousand (3,000) pounds whichever is greater.

C. Positioning device connectors shall be drop forged, pressed, or formed steel, or made of equivalent materials. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the positioning system.

D. Connecting assemblies shall have a minimum tensile strength of five thousand (5,000) pounds.

E. Only locking type snaphooks shall be used with positioning devices.

F. Do not attach snaphooks directly to webbing, rope, wire rope, to each other, to a dee-ring to which another snaphook or other connector is attached, to a horizontal lifeline, or to any object which is incompatibly shaped and/or dimensioned. In relation to the snaphook, unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

G. Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be reported to the Safety Coordinator immediately. Moreover, the positioning device will be removed from service immediately.

H. Positioning devices shall not be used to hoist materials.

VI. Roof work - warning line systems:

When standard handrails are not around a roof, AlexRenew staff personal fall arrest systems or a warning line systems need to be used. A warning line system is a barrier erected on a roof to warn AlexRenew employees that they are approaching an unprotected roof side or edge, and designates an area in which roof/deck work may take place without the use of guardrail, personal fall arrest system, designed to protect AlexRenew employees in the area. The deck openings on Building 44 are a good example of this. I this case the Miller *Edge* System will be used.

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A. The roof warning line system shall be erected around all open sides of the roof /deck work area.

B. When mechanical equipment is not being used, the warning line shall be erected not less than ten (10) feet from the roof edge

C. Points of access, such as, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.

D. When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

E. Warning lines shall consist of ropes, wires, or chains, flagged at not more than six (6) foot intervals with high-visibility material.

F. The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is not less than thirty-four (34) inches from the walking/working surface and its highest point is no more than thirty-nine (39) inches from the walking/working surface.

G. After the warning line system is erected, the rope, wire, or chain shall be attached to stanchions capable of resisting, without tipping over a force of at least six-teen (16) pounds applied horizontally against the stanchion, thirty (30) inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge.

H. The rope, wire, or chain used for the warning line systems shall have a minimum tensile strength of five hundred (500) pounds after being attached to the stanchions.

I. The warning line system shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

J. AlexRenew staff shall not be allowed in the area between a roof/deck edge and a warning line unless the employee is performing work in that area.

K. Materials and equipment shall not be stored within six (6) feet of a roof /deck edge unless guardrails are erected at the edge.

L. Materials which are piled, grouped, or stacked near a roof/deck edge shall be stable and self-supporting.

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VII. Fall protection safety monitoring systems:

Before work at elevations is to begin, a safety monitoring system must be thought out and designed for that particular job. Moreover, safety monitoring systems is a safety system in which an AlexRenew Teams has a designated competent person responsible for recognizing and warning AlexRenew staff of fall hazards. The following are requirements for the competent person:

A. In all AlexRenew Teams, the employee must be a Team Leader to act as a competent person, and have received training.

B. The competent person must be able to recognize fall hazards.

C. Must be able to warn employee(s) when it appears that the employee(s) is unaware of a fall hazard or acting in an unsafe manner.

D. Must be on the same walking/working surface and within visual sighting distance of the employee(s) being monitored.

E. The safety monitor (competent person) must be close enough to communicate orally with the employee(s).

F. The safety monitor shall have no other responsibilities that could take their attention from the monitoring function.

VIII. Covering of holes:

Team Leaders are also responsible for insuring that holes in floors, roofs, and other walking/working surfaces are covered. The following is a list of requirements for covering holes:

A. Covers for holes shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

B. All covers shall be secured when installed to prevent accidental displacement by wind, equipment, or employees.

C. Some covers shall be marked with the word "Hole" or "Cover" to provide warning of the hazard.

IX. Over head protection:

All AlexRenew employees working at elevations need some type of over head protection from pipes, beams, lights, bricks, debris etc. One form of over head protection is the use of a hard hat. AlexRenew is considered a hard hat area!

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FIRST AID PROGRAM

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First Aid Program

Purpose

Alexandria Renew Enterprises is dedicated to the protection of its employees from on-the-job injuries and illnesses. However, when injuries or illnesses do occur, we are prepared to immediately respond to the needs of the injured or ill.

This written First Aid Program is intended to ensure that Alexandria Renew Enterprises meets the requirements of 29 CFR 1910.151, Medical Services and First Aid, 29 CFR 1926.23, First Aid and Medical Attention, and 29 CFR 1926.50, Medical Services and First Aid.

Administrative Duties

The Safety Coordinator is responsible for establishing and implementing the written First Aid Program. This person has full authority to make necessary decisions to ensure the success of this program. Copies of this written program may be obtained from the Safety Coordinator or on the SharePoint intranet website.

First Aid Personnel

The Safety Coordinator is readily available for advice and consultation on matters of workplace health.

The *National EMS Education and Practice Blueprint* lists the following first aid designations:

* **First aid provider**: Occupationally required to be trained in first aid even though they may not be specifically obligated by law to perform first aid. This individual responds as a "Good Samaritan." Uses a limited amount of equipment to perform initial assessment and provide immediate life support and care while awaiting arrival of emergency medical services (EMS).
* **First responder**: Uses a limited amount of equipment to perform initial assessment and intervention and is trained to assist other EMS.
* **Emergency Medical Technician (EMT)-Basic**: The 2nd level of professional emergency medical care provider. This individual is qualified to function as the minimum staff for an ambulance.
* **EMT-Intermediate**: The 3rd level of professional emergency medical care provider. Can perform essential advanced techniques and administer a limited number of medications.
* **Paramedic**: The 4th level of professional emergency medical care provider. This individual can administer additional interventions and medications.

The following person(s) are trained to render first aid at Alexandria Renew Enterprises

Name	Department	Shift

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SEE ATTACHED CPR/FIRST RESPONDERS LIST

Hazard and Medical Services Assessment

The Safety Coordinator has assessed Alexandria Renew Enterprises for hazards to determine whether any pose the risk of a life-threatening or permanently disabling injury or illness.

It was determined that the following injuries or illnesses are likely:

Injury/Illness type:	**Injury/Illness:**	**Department affected:**
Pinch Points	Lacerations, Bruises	Maintenance/Operations
Contact with Equipment	Bruises, Cuts, Breaks	Maintenance/Operations
Falls	Contusions, Strains	All Staff
Chemical Contact	Burns, Eye Irritation	Maintenance/Operations/Quality
Biological Contact	Infections	Maintenance/Operations/Quality
Overexertion	Strains	All Staff
Repetitive Motion	Carpal Tunnel	All Staff

The nearest hospital, clinic, or infirmary, is located at:

Clinic	**Hospital**
Concentra Occupational Clinic	INOVA Alexandria Hospital

When hazards or locations change, the Human Resource Director or Safety Coordinator will re-assess our risk and determine whether or not we are required to train an on-site employee in first aid.

First Aid Supplies and Equipment

It is important that our first aid supplies and equipment meet the specific needs of our workplace.

The Human Resource Director or Safety Coordinator has ensured that adequate first aid supplies are readily available.

We provide these supplies in first aid cabinets located in the Office, Production, Engineering and Shipping/Receiving departments.

The Human Resource Director or Safety Coordinator checks the first aid supplies. Supplies are replaced promptly when expended.

In addition to first aid supplies, we provide the following:

Automated External Defibrillator (AED)
Eyewash/Shower Stations
Bloodborne Pathogen PPE with Cleanup & Disposal Kits

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Because we have injurious corrosive materials, Alexandria Renew Enterprises provides these drenching and flushing facilities that meet the specifications of ANSI Z358.1, *Emergency Eyewash and Shower Equipment*:

Department	**Location**
Quality	**Building J**
Operations	**Building L**
Operations	**Building N**

Because it is reasonably anticipated that employees will be exposed to blood or other potentially infectious materials while rendering first aid, we provide personal protective equipment. (See our written Exposure Control Program for further details.)

Posting

To help those responding to a medical emergency, we have posted a listing of First Aid/CPR trained employees on the company bulletin board.

Training

Training is the heart of our First Aid Program. Employees should NOT attempt to rescue or treat an injured or ill employee unless they are qualified to do so. Instead, they should contact someone who is qualified.

Employees who are qualified to render first aid have completed Alexandria Renew Enterprise's first aid training program. Alexandria Fire Department is responsible for conducting training.

First aid training in Basic First Aid and CPR is done for designated management employees. Our training ensures that trainees are knowledgeable in:

- AED
- CPR
- Heart Attacks
- Strokes
- Cuts
- Burns
- Strains
- Back Injuries
- Falls
- Heat Stress Related Illnesses

A copy of the training materials and information are provided to each First Aid Provider. A copy of this material is also retained in the Human Resource or Safety Coordinator's office.

Training Certification

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After an employee has completed the facility's training program, the trainer will determine whether the employee can safely perform first aid. The Human Resource Director or Safety Coordinator is responsible for keeping records verifying certification of each employee who has successfully completed training. Each certificate is a valid certificate in first-aid/CPR training, and includes the name of the employee, the date(s) of the training, and the signature of the person who performed the training and evaluation.

Retraining

Trained employees are retrained every year for CPR and every 3 years for Basic First Aid to keep their knowledge and skills current.

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First Aid Procedures

Accident Reporting

After the immediate needs of an injury or illness emergency have been met, we require our employees to report the event to their supervisor. Extremely minor injuries, like a small bruise, do not need to be reported. However, those injuries and illnesses involving professional treatment, time away from work, or a near miss of a more serious accident, must be reported to an employee's supervisor. Even injuries that do not become apparent until after the cause must be reported. For example, back pain that develops over a period of time must be reported.

Recordkeeping

The Safety Coordinator is responsible for maintaining the following records and documentation relating to first aid, injuries, illnesses, and accidents:

- **Plant Incident/Injury/Illness Log**
- **OSHA 300 Log**
- **Supervisor Report of Incident/Accident and/or Injury**
- **State First Report of Injury**

Program Evaluation

By having the Safety Coordinator evaluate and, as necessary, revise our program, we ensure our program's effectiveness and prevent or eliminate any problems. Program evaluation is performed annually or as needed. Program evaluation involves the following:

- Review of written First Aid Program
- Review of types of Incidents or Accidents
- Review of First Aid Supplies available

- Review of Designated First Aid/CPR trained providers

Appendices

Alexandria Renew Enterprises has attached the following appendices to this written program:

- Appendix A: First Aid Supply List
- Appendix B: First Aid Guidelines
- Appendix C: OSHA Guidelines for First Aid Program - PDF file
- Appendix D: Plant Incident/Accident Log - Excel file

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First Aid Supplies

Appendix A

Fingertip Bandage - 1 ¾" x 2"
Dura-Strip Clear Adhesive Bandage - 1"x 3"
Fabric Knuckle Bandage - 1 ½"x 3"
Elastic Strip Bandage - 7/8" x 3"
Roll Elastic Tape - 2 ½" x 4 ½ yds.
Small Strip Bandage - 5/8"x 1 ½"
Tri-Cut Adhesive Tape
Triangular Bandage
Gauze Pads - 3"x 3"
Telfa Sterile Pad - 2"x 3"
Elastic Roller Gauze - 3"x 4 ½ yds
Zee-Flex Self-Adhesive Flexible Wrap - 4"x 180"
First Aid Antiseptic Spray
Spray-On Blood Clotter
3-1 First Aid Antibiotic Ointment
Hydrocortisone Anti-Itch Cream
Hydrogen Peroxide - 4 oz. Bottle
Antiseptic Swabs
Instant Ice Pak
Sterile Eye Wash
Eye and Skin Buffered Flush Solution
Sterile Cotton Tipped Applicators
Clean Wipes
1 Pair Scissors
2 Pair Latex Gloves
Microshield Mouth Barrier
Body Fluid Disposal Kit
First Aid Guide

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Appendix B

FIRST AID TREATMENT

GUIDELINES

FOR SUPERVISORS

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BURNS: CHEMICAL

I. TREATMENT FOR SKIN CONTACT

A. First person on the scene, **immediately wash the contacted area with large amounts of water for a full 15 MINUTES without interruption**.

B. Second person on the scene **secure Material Safety Data Sheet**.

C. Remove clothing that has chemical or is suspected of having chemical on it. Do not put any of the clothing back on for any reason.

D. For minor burns, after washing away the chemical with cold water for 15 minutes, follow specific instructions for neutralizing the chemical only if those instructions are immediately available.

E. Follow instructions on MSDS concerning seeking medical attention.

1. During daytime hours take the victim to

Concentra Occupational Clinic

After hours or on weekends take the victim to:

INOVA Alexandria Hospital

2. After hours and on weekends take to the Hospital Emergency Room.

3. **Always take Material Safety Data Sheet with you.**

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BURNS: CHEMICAL

II. TREATMENT FOR EYE CONTACT

A. The **eyewash station** is located at **the forklift battery charging station and in the maintenance shop.**

B. Have the victim tilt his head with the injured eye nearest the floor.

C. Hold his eyelids open and flood the eye with water. The water must run from the inner corner of the eye to the outer corner. **Flush for 15 MINUTES.**

D. Be very careful not to get any of the chemical or any of the irrigating solution into the other eye. If this happens you must treat it for chemical burns also.

E. Remove any patches of white film or any loose particles of dry chemical by lifting them off with the tip of a corner of a sterile gauze pad.

F. **DO NOT PATCH** an eye that has been burned with a chemical (acid/alkali).

G. Follow instructions on SDS concerning the seeking of medical attention. Transport to:

Concentra Occupational Clinic
After hours or on weekends take to:

INOVA Alexandria Hospital

Always take the Safety Data Sheet with you.

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BURNS: FULL THICKNESS (3RD DEGREE)

A. SIGNS AND SYMPTOMS

1. White or charred appearance
2. Complete loss of all layers of skin
3. Deep tissue destruction

B. TREATMENT

1. **Do not** remove clothing that is stuck in burns.
2. Position
    a. If victim has burns on the face or neck place him/her in a reclining position with his/her head and shoulders propped up on pillows to aid in breathing
    b. If burns are on the trunk of the body or the limbs place victim in a flat position with affected limb elevated above the above the level of the heart
3. Cover burns with thick, sterile gauze, or freshly laundered aprons and oven mitts
4. **DO NOT SUBMERGE** area of burn in cold water or apply cold compresses. This will increase the degree of shock the victim is experiencing
5. DO NOT APPLY ointments, sprays, etc.
6. Treat for shock
7. Call an ambulance for transport to the Hospital **IMMEDIATELY!** Time is of utmost importance. Do not allow the victim to stand up.

COUNTY AMBULANCE SERVICE

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BURNS: PARTIAL THICKNESS (1ST. DEGREE)

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A. SIGNS AND SYMPTOMS

1. Redness or discoloration of skin
2. Pain
3. Mild swelling

B. TREATMENT

1. Submerge in cold (not ice) water or apply Zee-ice Pack for approximately 15 minutes or until pain subsides
2. Wash burn with normal saline.
3. Apply **burn ointment**
4. Apply sterile dressing and secure in place
5. Follow-up with plant nurse or plant EMT

BURNS: PARTIAL THICKNESS (2ND. DEGREE)

A. SIGNS AND SYMPTOMS

1. Redness in greater depth than in 1st degree burns
2. Mottled appearance
3. Development of blisters
4. Wet appearance of skin surface (seeping)

B. TREATMENT

1. Small area (no longer than a silver dollar)

   a. Submerge in cold (not ice) water or apply Zee-ice Pack for approximately 15 minutes or until pain subsides
   b. Wash burn area with normal saline or H_2O_2 (Hydrogen Peroxide)
   c. Apply burn ointment
   d. Apply sterile dressing and secure in place
   e. Follow-up with plant or plant EMT

2. Large area

   a. Wash with normal saline
   b. **DO NOT APPLY OINTMENT OF ANY KIND**
   c. Apply sterile dressing and secure in place
   d. Follow-up with company nurse or company EMT **immediately**
   e. If company nurse or company EMT is not available take the victim to the Occupational Medicine clinic for follow-up

   f. After hours and on weekends employee may be taken to the Hospital Emergency Room
   g. If arms or legs are burned keep them elevate above the heart
   h. Treat for shock (see page 5)

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CHOKING

I. SIGNS AND SYMPTOMS

A. Violent obvious choking. May be using the "Universal Distress Signal" of choking: Clutching the neck between the thumb and index finger.
B. Crowing sounds and big efforts to breath.
C. Bluish color of the victims' face, hands and neck.
D. No breathing
E. Unconsciousness

II. TREATMENT

A. **You must remain calm**
Page nurse or CPR trained person

B. What to do <u>if the victim is conscious and able to cough:</u>

1. Allow the victim to be in a position comfortable to him/her.
2. Encourage him/her to cough, and reassure him/her that you are there to help and will not leave him/her alone.
3. **Do not** give the victim anything to eat or drink.

C. What to do <u>if the victim is conscious and unable to cough</u>:

1. Stand him/her up, or sit him/her down.
2. Get behind him/her and wrap your arms around his/her waist, with one of your fists inside the other. The thumb side of your first needs to be touching his/her abdomen.
3. Your fists need to be about halfway between the victims' breastbone and his/her belly-button.
4. Press your fists into the victim's abdomen with quick upward and inward thrusts.
5. Repeat thrusts until victim begins to cough, breathe, have no more obstruction, or become unconscious.

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CHOKING

D. What to do <u>if victim is unconscious and has an obstructed airway:</u>

1. If the victim is not breathing, position him/her on his back. Tilt his/her chin with one hand and close his/her nostrils with the other.

2. Put your mouth over his/her with a tight seal so the air that you blow will not escape.

3. Take a good sized breath and blow into the victim's mouth.

4. If unsuccessful, reposition the head and try again.

5. If not air is getting in at this point, instruct the person who has come to help to CALL AN AMBULANCE.

6. Straddle the victim's hips.

7. Put one hand on top of your other hand and place them midway between the victim's rib cage and his/her belly-button. The heel of the bottom hand should be resting in the middle of the victim's abdomen.

8. Keeping your arms, shoulders and wrists stiff, **press upwards towards the diaphragm with quick four quick thrusts.**

9. Next, grasp both the tongue and his/her lower jaw between your thumb and fingers and lift to open his/her mouth.

10. With the index finger of your other hand, check along the inside of his/her cheek, the back of his/her throat, and the other cheek for whatever was choking him/her. If you find it, remove it with a hooking action of your index finger, and blow into his/her mouth again. You will need to breathe for him/her until he can breathe on his/her own.

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11. If you do not find the foreign object, kneel astride the victims hips again and repeat the sequence until successful. You should check for dislodging of the foreign object every 6 to 10 abdominal thrusts.

12. This procedure is called the Heimlich maneuver. Any time it is used the victim needs to be checked by a doctor even if there is no obvious damage.

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CUTS

I. ABRASIONS/SUPERFICIAL CUTS

A. Dangers

1. Contamination of and infection of the wound.

B. Treatment

1. Wash your hands with soap and water

2. Wash in and around the victim's wound with soap water gently to remove bacteria and any foreign matter. Rinse thoroughly with running tap water.

3. Flush with Hydrogen Peroxide

4. Blot wound dry with sterile gauze pad

5. Apply antibacterial ointment to wound

6. Apply sterile dressing and secure in place

7. Instruct victim to observe for signs of infection and report to the Plant First Aid Representative

8. Signs of infection are
   a. Redness
   b. Swelling
   c. Heat in or around the affected area
   d. Purulent drainage
   e. Pain

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CUTS

II. DEEP CUTS

A. Dangers

1. Excessive bleeding
2. Damage to muscles, tendons and nerves
3. Risk of infection
4. Shock

B. Treatment

1. Have the victim sit or lie down
2. Place sterile gauze over the wound
3. Apply direct hand pressure on the wound by pressing down with your palm on the gauze. In most instances this will stop the bleeding within 15 minutes.
4. If blood soaks through the first gauze pad covering the wound, **DO NOT REMOVE THE PAD**. Instead, add additional pads and continue direct pressure with the palm of your hand more firmly.
5. Elevate the injured extremity above the level of the heart. This will slow the loss of blood through the wound. Maintain pressure with your palm on the gauze over the wound.
6. Treat for shock.
7. Call Plant First Aid Representative
8. If First Aid Representative is not available transport victim to:
   (Facility's Assigned Occupational Medical Clinic
   or Hospital Emergency Room)

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EYE INJURIES

I. FOREIGN OBJECT

A. Signs and symptoms
1. Redness of eye(s)
2. Burning sensation
3. Pain
4. Headache
5. Watery eye

B. Treatment
1. Do not allow the victim to rub his/her eyes.
2. Instruct him/her to sit down.
3. Pull down the lower lid to see if the object is on its inner surface. If it is, gently lift it off with the corner of a sterile gauze pad. **NEVER USE DRY COTTON AROUND THE EYE!**
4. Next look for objects under the upper lid.

a. Have the victim look down and grasp the lashes of his/her upper lid.
b. Pull the upper lid forward and down over the lower lid. Tears may help dislodge the foreign object.
c. If the object is still in the eye:

1. Depress the victim's upper lid with a matchstick or similar item.
2. Pull upward on the lashes against the matchstick to evert the lid. You should now be able to see the inner surface of the upper eyelid.
3. Lift off the foreign object with the corner of a sterile gauze pad gently.
4. Replace the lid by pulling downward gently on the lashes.

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5. Flush the eye with water from the eye wash station. The water must run from the inner to the outer corner of the eye.

6. If the object is still in the eye and you suspect it might be embedded or stuck in the eye, call a doctor or send the victim to the emergency room.

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EYE INJURIES

II. PENETRATING INJURIES

A. Treatment

1. Do not try to remove the object or to wash the eye.
2. Have the victim lie down.
3. Cover both eyes loosely with sterile gauze and secure with adhesive tape. There should be no pressure on the eyes.
4. Keep the victim quiet and on his/her back.
5. Take him/her to the emergency room or call an ambulance.

III. BLUNT INJURY OR BLACK EYE

A. Dangers

1. The structure of the eye may be torn or ruptured in serious cases.
2. Vision may be lost.
3. Bleeding or infection may cause secondary damage.
4. Bleeding may re-occur after several days.

B. Treatments

1. Apply a dry, sterile gauze pad or eye patch to eye and secure it with adhesive tape. Avoid undue pressure on the eye.
2. Transport the victim to the emergency room or call an ambulance.
3. The victim should be kept FLAT ON HIS/HER BACK.

IV. EYELID INJURY

A. Treatment

1. Stop bleeding by gently applying direct pressure with a sterile gauze pad.
2. Cleanse the wound carefully with eyewash or normal saline.

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3. Apply a sterile gauze bandage and secure in place with adhesive tape.
4. Send to doctor's office or to the emergency room.

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FAINTING

I. DEFINITION - Loss of consciousness

II. SYMPTOMS - Prior to onset

A. Skin color pale
B. Skin feels cold and clammy
C. Victim feels dizzy and may have uncomfortable abdominal sensation
D. Pulse is usually weak, rapid and often irregular

III. TREATMENT

A. Have victim lie down, or sit with head between knees
B. If he/she is already unconscious leave him/her lying down
C. Loosen any tight clothing and keep crowds away
D. If he/she vomits, roll him/her side or turn his/her head to the side
E. Make sure he/she is in a position so as to be able to breathe
F. Examine the victim to see if he/she hurt himself/herself when he/she fell
G. Do not pour water over the victim's face!
H. Do not give the victim anything to drink unless he/she is fully conscious and not nauseated
I. After the victim regains consciousness allow him/her to lie down for about 30 minutes, and question him/her about his/her medical history
J. Take the victim to the doctor or to the emergency room if after hours or on the weekend.

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HEART ATTACK

I. SIGNS AND SYMPTOMS

A. Heart attack and choking look a lot alike. Ask the victim, 'are your choking'? If he/she is conscious and cannot speak he/she is most likely choking. (See First Aid guidelines for choking page --).

B. Persistent chest pain under the breastbone, not necessarily severe, which may extend to one or both shoulders, arms, neck or jaw.

C. Gasping or shortness of breath.

D. Extreme pallor or bluish discoloration of the lips, skin and nail beds.

E. Extreme weakness, inability to move around.

F. May be incoherent or unconscious.

G. Nausea and vomiting.

II. TREATMENT

A. Position the victim comfortably in a flat position while calling for help.

B. Assess the victim and begin CPR if indicated. If neither you nor the first person who came to help know CPR, send him/her to page a CPR trained person, or any CPR trained person.

C. The first trained person to arrive should begin CPR.

D. The second person to arrive should call an ambulance.

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E. Immediately after calling the ambulance call the victims doctor. He/she may want to give further instructions for the period while waiting for the ambulance.

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F. Do not move the victim unless it is dangerous to leave him/her where he/she is.

G. Once CPR is begun continue until the victim revives or until the ambulance comes.

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SEIZURES
(CONVULSIONS)

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I. SIGNS AND SYMPTOMS

A. Stiffness of all the body muscles, followed by jerking movements. Sometimes it will only be groups of muscles.

B. Unconsciousness

C. Bluish color of the face and lips

D. Foaming of the mouth

E. Gradual recovery

II. TREATMENT

A. Remove any objects around victim that he/she could hurt himself/herself on (Protect him/her from injury)

B. Loosen tight clothing

C. Do not try to restrain the victim

D. Do not make any effort to stop the convulsion

E. A small soft object can be placed under the head

F. Do not try to open the victim's mouth or place anything between the teeth. The convulsion will not cause any permanent damage.

G. If possible turn the head to one side to allow excess saliva to flow freely from the mouth.

H. Allow the victim to rest for awhile after the convulsion stops.

I. Do not pour any liquid into the victim's mouth or on the victim's face.

J. If the victim has repeated convulsions, call an ambulance or take him/her to the emergency room.

K. Take the victim to the doctor or to the emergency room.

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SHOCK

I. SIGNS AND SYMPTOMS

A. Early stage

1. Skin color pale or bluish
2. Most clammy skin
3. Nail beds-pale or bluish in color
4. Inner eyelids of dark skinned person pale or bluish in color
5. Rapid pulse (over 100 beats per minute) check at wrist or in the neck, 2-4 fingerbreadths down from the jawbone on either side.
6. Rapid shallow or irregular breathing.
7. Restlessness or anxiety is a sign of lack of oxygen. Victim may be thrashing about restlessly.
8. COMPLAINING OF SEVERE THIRST
9. Nausea and vomiting

B. Late stage

1. Apathy or unresponsiveness
2. Sunken eyes-vacant expression
3. Dilated pupils (will appear large and black)

II. TREATMENT

A. Eliminate cause of shock (severe bleeding, etc.)
B. Keep the victim lying down
C. Cover the victim ONLY ENOUGH to keep the victim from losing body heat.
D. Call an ambulance COUNTY AMBULANCE SERVICE
E. Body positioning

1. **Neck or spine injury DO NOT MOVE!**
2. Lower face or jaw injury -- place on side, but make sure the he/she can breathe
3. Head injury-flat, but his head must not be lower than the rest of his/her body.

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4. Other injuries-elevate feet 8-12 inches, unless he has increased difficulty breathing or the elevation increases his/her pain, in which case, lower the feet again.

FACE IS RED RAISE THE HEAD
FACE IS PALE RAISE THE TAIL

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STROKE

I. MAJOR STROKE

A. Signs and symptoms

1. Unconsciousness
2. Paralysis or weakness on one side of the body
3. Difficulty in breathing and swallowing
4. Loss of bowel and bladder control
5. Pupils of the eyes unequal in size
6. Can't talk or has slurred speech

B. Treatment

1. Call **CPR trained person**
2. Position the victim on his/her side so any secretions will drain.
3. Cover with a blanket
4. Make sure the victim is still breathing
5. Mouth to mouth resuscitation if not breathing
6. Call an ambulance -- this is the responsibility of the second person on the scene
7. **DO NOT GIVE VICTIM ANYTHING TO EAT OR DRINK**

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II. MINOR STROKE

A. Signs and symptoms
1. Victim is not unconscious
2. Headache
3. Confusion
4. Slight dizziness or ringing in the ears
5. Tingling sensation in extremities (one side of body)
6. Minor difficulties in speech

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7. Memory changes

B. Treatment

1. Protect the victim against accidents or physical exertion
2. Victim will need medical attention

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SECTION I

OSHA HAZARD COMMUNICATION STANDARD

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OSHA Hazard Communication Standard

The following summarizes your rights to hazardous chemical information under the Occupational Safety and Health Act, Hazard Communication Standard, 29 CFR Part 1910.1200.

PURPOSE:

The purpose of this Standard is to ensure that the hazards of all chemical manufacturers or importers are evaluated and that information concerning these hazards is communicated to affected employers and employees. This conveyance of information is to be accomplished by means of a comprehensive hazard communication programs, which includes container labeling and other forms of warnings, Material Safety Data Sheets and employee training.

SCOPE AND APPLICATION:

All chemical manufacturers or importers are to assess the hazards of chemicals, which they produce or import. Employers are to provide information to their employees about the hazardous chemicals to which they are exposed. Distributors are to transmit information on hazardous materials supplied to employers who use them in their workplace. This applies to any chemical, which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

The Safety Coordinator shall maintain Safety Data Sheets and labels on materials used and ensure that employees are informed of the hazards of the chemicals in their workplace and provide proper training in handling and using these chemicals.

HAZARD DETERMINATION:

Chemical manufacturers and importers shall evaluate chemicals they produce or distribute to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose to, but instead can rely on evaluations performed by the manufacturer or distributor of the materials. Products must be evaluated for both health and physical hazards.

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WRITTEN HAZARD COMMUNICATION PROGRAM:

The written program must describe the following:

1. How labeling will be handled.
2. How Material Safety Data Sheets (MSDS) will be maintained.
3. Employee training.
4. List of hazardous chemicals identified in the workplace.
5. Methods used to inform employees of the hazards of non-routine tasks.
6. Methods by which contractors will be informed of the hazardous chemicals in the workplace.

LABELS AND OTHER FORMS OF WARNING:

Containers of hazardous chemicals coming in or leaving the workplace must be labeled, tagged, or marked with the name of the hazardous chemical and appropriate hazard warnings. In addition, the name and address of the manufacturer or distributor should be included on the container. "Container: is defined as any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank or the like that contains hazardous chemicals. Pipes and piping systems are not considered containers.

SAFETY DATA SHEETS:

Chemical manufacturers and importers are required to obtain or develop a Safety Data Sheet for each hazardous chemical they produce or import. Employees shall have a Safety Data Sheet for each hazardous chemical used in the workplace. Safety Data Sheet content is spelled out by the Standard. Safety Data Sheets must be in English and shall be readily accessible to employees. Safety Data Sheets may be kept in any form as long as the required information is provided. Where Material Safety Data Sheets are not provided, the employer is required to request one as soon as possible from the supplier. Safety Data Sheets must be currently maintained.

EMPLOYEE TRAINING AND INFORMATION:

Employers must provide employees with information and training on hazardous chemicals in their work areas. Training shall be provided at the time of their initial assignment and anytime a new hazard is introduced.

Employees must be provided information on:

1. Requirements of this Standard.
2. Operations in their work area where hazardous chemicals are present.

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3. The location and availability of the written hazard communications program, including the required list of hazardous materials and Safety Data Sheets (SDS).

Employee training shall include:

1. Methods and observations that may be used to detect the presence or release of a hazardous chemical.
2. Physical and health hazards of the chemicals in the work area.
3. How employees can protect themselves from these hazards.
4. How to respond in emergency situations.
5. Details of the hazard communications program, including an explanation of the labeling system and Material Safety Data Sheet system.

TRADE SECRETS:

The Standard provides for trade secret protection by providing specific guidelines for protecting proprietary chemical identification information. Provisions are included to allow the identity of such trade secret information to be given to medical and health professionals if the information is necessary for emergency or first-aid treatment, or required by the user to evaluate health effects within their operation.

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SECTION II

WRITTEN HAZARD COMMUNICATION PROGRAM

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Written Hazard Communication Program

Alexandria Renew Enterprises has developed and is now implementing a ***Written Hazard Communication Program*** for our workplace. This program examines specific criterion related to label requirements, other forms of warning, Material Safety Data Sheets, and employee information and training. The program breaks down plant work areas, chemicals used in each area and defines "safe working". Our goal is to provide a safe working environment for all employees. We intend to protect our employees from hazardous chemicals in the workplace by means of a thorough employee training program.

I. LISTING OF ALL HAZARDOUS CHEMICALS

A listing of all hazardous chemicals used by Alexandria Renew Enterprises is listed in "Appendix A" of this training manual. The identity of each hazardous chemical is listed by its *common name*; the name that will be recognizable and familiar to employees. "Appendix A' also states which department is affected. Labels or other warning forms are in place concerning each product.

II. LABELING AND OTHER FORMS OF WARNING

The purpose of the label or other form of warning is to provide an immediate visual warning to employees concerning the hazards of the chemical in its container. Two important points must appear on hazardous chemical labels and they are as follows:

1. Identity of the hazardous chemical
2. Appropriate hazard warnings
3. Name and address of the chemical manufacturer, importer or other responsible party

The identity of the hazardous chemical on the label may appear either as the chemical name or common name. For the sake of our program and training reference purposes, we ell always utilize the product's common name (if applicable). Any labels that we make and apply will also use the product's common name.

There are many areas of responsibility regarding an effective labeling program. A team effort is necessary in order for our program to be successful. Every employee should become label conscious. The label hazard warning must convey the hazard of the chemical by appropriate warning. Phrases such as *"Warning"*, *"Danger"* do not meet the requirements established by OSHA. Hazard Warning means any words, pictures, or combination thereof and are appropriate that convey the hazards of the chemical. All

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containers in the workplace that contain a hazardous chemical must be properly labeled. Each department supervisor will be responsible for ensuring that all containers in the plant or outstations are labeled by that date.

Labeling responsibilities will be an ongoing process. As each department orders and receives products, it will be that department head's responsibility to check incoming and outgoing products that fit into the hazard chemical category for proper labeling. Labels will be distributed to every department for use on containers without labels. No one shall remove or deface existing labels on the incoming containers of hazardous chemicals unless the container is immediately marked with the required information. Department Managers and Supervisors will make sure that labels or other forms of warning are legible, written in English, and prominently displayed on the container or readily available in the work area throughout each work shift. Signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used in lieu of affixing labels to individual stationary process containers as long as the alternative method identifies the containers to which it is applied and it conveys the appropriate information.

Portable containers are exempt from labeling as long as the hazardous chemical is for the immediate use of the employee who performs the transfer.

Any reviewing, updating of labeling systems, and alternative labeling must be approved by the Safety Coordinator.

III. SAFETY DATA SHEETS

The Safety Coordinator has overall responsibility of the Hazard Communication Program and will, along with the applicable Department Managers and Supervisors, update information on current SDS's and also obtain new SDS's. The Safety Coordinator will ensure that formal classroom training is conducted in order to introduce and familiarize all employees with our Hazard Communication Program and the SDS's.

After initiation of the Hazard Communication Program with all present employees, the responsibility of covering out program with new employees will rest with the departmental supervisors. As a part of their first day on the job, new employees will be familiarized with our program and trained to recognize hazardous chemicals in the workplace and have a basic understanding of the information provided by the SDS's.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum

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information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., firefighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

description of all 16 sections of the SDS, along with their contents, is presented below:

Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known.
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (includin recommendations given by the supplier). [1]

Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category[1]).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

Substances

- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

Mixtures

- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
  - Present above their cut-off/concentration limits or
  - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
  - A trade secret claim is made,
  - There is batch-to-batch variation, or
  - The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

Section 4: First-Aid Measures

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

Section 5: Fire-Fighting Measures

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This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemica burns.
- Recommendations on special protective equipment or precautions for firefighters.

Section 6: Accidental Release Measures

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent o minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up)

Section 7: Handling and Storage

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements)

Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).

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- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipmer (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.);
- Upper/lower flammability or explosive limits;
- Odor;
- Vapor pressure;
- Odor threshold;
- Vapor density;
- pH;
- Relative density;
- Melting point/freezing point;
- Solubility(ies);
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Upper/lower flammability or explosive limits;
- Vapor pressure;
- Vapor density;
- Relative density;
- Solubility(ies);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential

Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

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Reactivity

- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release exces pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA

Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may

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include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient (Kow) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities

Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)[1].
- UN proper shipping name[1].
- Transport hazard class(es)[1].
- Packing group number, if applicable, based on the degree of hazard[2].
- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78[3] and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code)).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

Section 15: Regulatory Information (non-mandatory)

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This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmenta Protection Agency, or Consumer Product Safety Commission regulations)

Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

V. NON-ROUTINE TASKS

In the event non-routine tasks need to be performed, each department supervisor will be responsible for informing their employees about special precautions needed while working with a hazardous chemical. Non-routine tasks many times involve working in confined areas and/or spaces or performing special tasks that are not done on a regular basis. Each department supervisor, using the MSDS, will review and brief employees before allowing work to begin in their work area regarding non-routine tasks.

Also, all other company safety compliance programs will coordinate with this program and govern work activities (Example: Confined Space, Lockout/Tagout, Respirator Program, etc.)

In the event outside contractors work in a department, the department supervisor in that area must use the MSDS to make them aware of hazardous chemicals present in the workplace. Once the contractor has been informed, it becomes their responsibility to inform their own employees.

IV. SUMMARY

Being able to locate important facts about hazardous materials from the eleven informational sections of the MSDS will help each employee maintain a safe working environment. The MSDS will tell us how to work safely when using hazardous materials by providing us with warning information, precautionary measures, emergency first-aid procedures, occupational control procedures, fire protection information, reactivity data, physical data, health effects and spill, leak and disposal information. Certainly it is impossible to memorize all these facts. This training program is to make you aware of where to find this information in your work area by referring to MSDS's in your department.

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The MSDS's will be available anytime for all employees to use as an effective tool to aid in "working safely".

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APPENDIX A

HAZARDOUS CHEMICAL INVENTORY

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APPENDIX B

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HAZARDOUS MATERIAL IDENTIFICATION SYSTEM
(HMIS)

ALTERNATE LABELING SYSTEM

The Occupational and Safety Administration's (OSHA) Hazard Communication Standard (1910.1200) requires that all chemicals be labeled to include appropriate Hazard Warnings. Remember that no one label can be the answer to every hazardous situation--- Communication must be ongoing and specific.

To assure that chemical containers may or may not have the appropriate labeling, our Facility utilizes an alternate labeling system in addition to any label attached by the supplier. This Labeling System is called the Hazardous Material Identification System or HMIS.

HMIS Labels identify chemicals with standard Hazard Ratings from 0-4 for Health, Flammability and Reactivity, plus an alphabetical designation for the required or recommended Personal Protective Equipment.

HMIS Labeling Information Charts are posted by our MSDS Manual Stations and chemical storage areas to provide a convenient central reference. This enables workers to assess their protective needs at a glance by explaining Hazard Ratings and show visually each protective equipment required for each alphabetical designation.

Hazardous Material Identification System (HMIS)

COLOR CODES

BLUE = HEALTH	Indicates that the material may, directly or indirectly, cause permanent or temporary injury due to acute exposure by physical contact, inhalation or ingestion.
RED = FLAMMABILITY	Assesses the relative susceptibility of materials to fireburst, based on the form or condition of the material and its surrounding environment.
YELLOW = REACTIVITY	Advises that the material may be susceptible to explosion, whether through self-reaction or polymerization, or by exposure to certain conditions or substances.
WHITE = SPECIAL PRECAUTIONS REQUIRED	White indicates the Personal Protective Equipment that is required or recommended when working with this chemical.

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Alexandria Renew Enterprises Document: Hazardous Communication Written Program Training: All Staff Approval Initials: Original Issue Date: 04/10/15 Revision Date:	ALEXANDRIA renew ENTERPRISES

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APPENDIX C

ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS STANDARD

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Regulations (Standards - 29 CFR)

Access to employee exposure and medical records. - 1910.1020

Regulations (Standards - 29 CFR) - Table of Contents

- **Part Number:** 1910
- **Part Title:** Occupational Safety and Health Standards
- **Subpart:** Z
- **Subpart Title:** Toxic and Hazardous Substances
- **Standard Number:** 1910.1020
- **Title:** Access to employee exposure and medical records.

- **Appendix:** A , B

1910.1020(a)

"Purpose." The purpose of this section is to provide employees and their designated representatives a right of access to relevant exposure and medical records; and to provide representatives of the Assistant Secretary a right of access to these records in order to fulfill responsibilities under the Occupational Safety and Health Act. Access by employees, their representatives, and the Assistant Secretary is necessary to yield both direct and indirect improvements in the detection, treatment, and prevention of occupational disease. Each employer is responsible for assuring compliance with this section, but the activities involved in complying with the access to medical records provisions can be carried out, on behalf of the employer, by the physician or other health care personnel in charge of employee medical records. Except as expressly provided, nothing in this section is intended to affect existing legal and ethical obligations concerning the maintenance and confidentiality of employee medical information, the duty to disclose information to a patient/employee or any other aspect of the medical-care relationship, or affect existing legal obligations concerning the protection of trade secret information.

..1910.1020(b)

1910.1020(b)

"Scope and application."

1910.1020(b)(1)

This section applies to each general industry, maritime, and construction employer who makes,

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maintains, contracts for, or has access to employee exposure or medical records, or analyses thereof, pertaining to employees exposed to toxic substances or harmful physical agents.

1910.1020(b)(2)

This section applies to all employee exposure and medical records, and analyses thereof, of such employees, whether or not the records are mandated by specific occupational safety and health standards.

1910.1020(b)(3)

This section applies to all employee exposure and medical records, and analyses thereof, made or maintained in any manner, including on an in-house or contractual (e.g., fee-for-service) basis. Each employer shall assure that the preservation and access requirements of this section are complied with regardless of the manner in which records are made or maintained.

1910.1020(c)

"Definitions."

1910.1020(c)(1)

"Access" means the right and opportunity to examine and copy.

1910.1020(c)(2)

"Analysis using exposure or medical records" means any compilation of data or any statistical study based at least in part on information collected from individual employee exposure or medical records or information collected from health insurance claims records, provided that either the analysis has been reported to the employer or no further work is currently being done by the person responsible for preparing the analysis.

..1910.1020(c)(3)

1910.1020(c)(3)

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise a right of access. For the purposes of access to employee exposure records and analyses using exposure or medical records, a recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

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1910.1020(c)(4)

"Employee" means a current employee, a former employee, or an employee being assigned or transferred to work where there will be exposure to toxic substances or harmful physical agents. In the case of a deceased or legally incapacitated employee, the employee's legal representative may directly exercise all the employee's rights under this section.

1910.1020(c)(5)

"Employee exposure record" means a record containing any of the following kinds of information:

1910.1020(c)(5)(i)

Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained;

1910.1020(c)(5)(ii)

Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs;

..1910.1020(c)(5)(iii)

1910.1020(c)(5)(iii)

Material safety data sheets indicating that the material may pose a hazard to human health; or

1910.1020(c)(5)(iv)

In the absence of the above, a chemical inventory or any other record which reveals where and when used and the identity (e.g., chemical, common, or trade name) of a toxic substance or harmful physical agent.

1910.1020(c)(6)

1910.1020(c)(6)(i)

"Employee medical record" means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician, including:

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1910.1020(c)(6)(i)(A)

Medical and employment questionnaires or histories (including job description and occupational exposures),

1910.1020(c)(6)(i)(B)

The results of medical examinations (pre-employment, pre-assignment, periodic, or episodic) and laboratory tests (including chest and other X-ray examinations taken for the purpose of establishing a base-line or detecting occupational illnesses and all biological monitoring not defined as an "employee exposure record"),

1910.1020(c)(6)(i)(C)

Medical opinions, diagnoses, progress notes, and recommendations,

..1910.1020(c)(6)(i)(D)

1910.1020(c)(6)(i)(D)

First aid records,

1910.1020(c)(6)(i)(E)

Descriptions of treatments and prescriptions, and

1910.1020(c)(6)(i)(F)

Employee medical complaints.

1910.1020(c)(6)(ii)

"Employee medical record" does not include medical information in the form of:

1910.1020(c)(6)(ii)(A)

Physical specimens (e.g., blood or urine samples) which are routinely discarded as a part of normal medical practice, or

1910.1020(c)(6)(ii)(B)

Records concerning health insurance claims if maintained separately from the employer's medical program and its records, and not accessible to the employer by employee name or other direct

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personal identifier (e.g., social security number, payroll number, etc.), or

1910.1020(c)(6)(ii)(C)

Records created solely in preparation for litigation which are privileged from discovery under the applicable rules of procedure or evidence; or

1910.1020(c)(6)(ii)(D)

Records concerning voluntary employee assistance programs (alcohol, drug abuse, or personal counseling programs) if maintained separately from the employer's medical program and its records.

..1910.1020(c)(7)

1910.1020(c)(7)

"Employer" means a current employer, a former employer, or a successor employer.

1910.1020(c)(8)

"Exposure" or "exposed" means that an employee is subjected to a toxic substance or harmful physical agent in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes past exposure and potential (e.g., accidental or possible) exposure, but does not include situations where the employer can demonstrate that the toxic substance or harmful physical agent is not used, handled, stored, generated, or present in the workplace in any manner different from typical non-occupational situations.

1910.1020(c)(9)

" Health Professional" means a physician, occupational health nurse, industrial hygienist, toxicologist, or epidemiologist, providing medical or other occupational health services to exposed employees.

1910.1020(c)(10)

"Record" means any item, collection, or grouping of information regardless of the form or process by which it is maintained (e.g., paper document, microfiche, microfilm, X-ray film, or automated data processing).

..1910.1020(c)(11)

1910.1020(c)(11)

"Specific chemical identity" means a chemical name, Chemical Abstracts Service (CAS) Registry

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Number, or any other information that reveals the precise chemical designation of the substance.

1910.1020(c)(12)

1910.1020(c)(12)(i)

"Specific written consent" means a written authorization containing the following:

1910.1020(c)(12)(i)(A)

The name and signature of the employee authorizing the release of medical information,

1910.1020(c)(12)(i)(B)

The date of the written authorization,

1910.1020(c)(12)(i)(C)

The name of the individual or organization that is authorized to release the medical information,

1910.1020(c)(12)(i)(D)

The name of the designated representative (individual or organization) that is authorized to receive the released information,

1910.1020(c)(12)(i)(E)

A general description of the medical information that is authorized to be released,

1910.1020(c)(12)(i)(F)

A general description of the purpose for the release of the medical information, and

1910.1020(c)(12)(i)(G)

A date or condition upon which the written authorization will expire (if less than one year).

..1910.1020(c)(12)(ii)

1910.1020(c)(12)(ii)

A written authorization does not operate to authorize the release of medical information not in existence on the date of written authorization, unless the release of future information is expressly authorized,

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and does not operate for more than one year from the date of written authorization.

1910.1020(c)(12)(iii)

A written authorization may be revoked in writing prospectively at any time.

1910.1020(c)(13)

"Toxic substance or harmful physical agent" means any chemical substance, biological agent (bacteria, virus, fungus, etc.), or physical stress (noise, heat, cold, vibration, repetitive motion, ionizing and non-ionizing radiation, hypo - or hyperbaric pressure, etc.) which:

1910.1020(c)(13)(i)

Is listed in the latest printed edition of the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS) which is incorporated by reference as specified in Sec. 1910.6; or

1910.1020(c)(13)(ii)

Has yielded positive evidence of an acute or chronic health hazard in testing conducted by, or known to, the employer; or

1910.1020(c)(13)(iii)

Is the subject of a material safety data sheet kept by or known to the employer indicating that the material may pose a hazard to human health.

..1910.1020(c)(14)

1910.1020(c)(14)

"Trade secret" means any confidential formula, pattern, process, device, or information or compilation of information that is used in an employer's business and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

1910.1020(d)

"Preservation of records."

1910.1020(d)(1)

Unless a specific occupational safety and health standard provides a different period of time, each

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employer shall assure the preservation and retention of records as follows:

1910.1020(d)(1)(i)

"Employee medical records." The medical record for each employee shall be preserved and maintained for at least the duration of employment plus thirty (30) years, except that the following types of records need not be retained for any specified period:

1910.1020(d)(1)(i)(A)

Health insurance claims records maintained separately from the employer's medical program and its records,

1910.1020(d)(1)(i)(B)

First aid records (not including medical histories) of one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and the like which do not involve medical treatment, loss of consciousness, restriction of work or motion, or transfer to another job, if made on-site by a non-physician and if maintained separately from the employer's medical program and its records, and

..1910.1020(d)(1)(i)(C)

1910.1020(d)(1)(i)(C)

The medical records of employees who have worked for less than (1) year for the employer need not be retained beyond the term of employment if they are provided to the employee upon the termination of employment.

1910.1020(d)(1)(ii)

"Employee exposure records." Each employee exposure record shall be preserved and maintained for at least thirty (30) years, except that:

1910.1020(d)(1)(ii)(A)

Background data to environmental (workplace) monitoring or measuring, such as laboratory reports and worksheets, need only be retained for one (1) year so long as the sampling results, the collection methodology (sampling plan), a description of the analytical and mathematical methods used, and a summary of other background data relevant to interpretation of the results obtained, are retained for at least thirty (30) years; and

1910.1020(d)(1)(ii)(B)

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Material safety data sheets and paragraph (c)(5)(iv) records concerning the identity of a substance or agent need not be retained for any specified period as long as some record of the identity (chemical name if known) of the substance or agent, where it was used, and when it was used is retained for at least thirty (30) years(1); and

_____

Footnote(1) Material safety data sheets must be kept for those chemicals currently in use that are effected by the Hazard Communication Standard in accordance with 29 CFR 1910.1200(g).

1910.1020(d)(1)(ii)(C)

Biological monitoring results designated as exposure records by specific occupational safety and health standards shall be preserved and maintained as required by the specific standard.

..1910.1020(d)(1)(iii)

1910.1020(d)(1)(iii)

"Analyses using exposure or medical records." Each analysis using exposure or medical records shall be preserved and maintained for at least thirty (30) years.

1910.1020(d)(2)

Nothing in this section is intended to mandate the form, manner, or process by which an employer preserves a record so long as the information contained in the record is preserved and retrievable, except that chest X-ray films shall be preserved in their original state.

1910.1020(e)

"Access to records" -

1910.1020(e)(1)

"General."

1910.1020(e)(1)(i)

Whenever an employee or designated representative requests access to a record, the employer shall assure that access is provided in a reasonable time, place, and manner. If the employer cannot reasonably provide access to the record within fifteen (15) working days, the employer shall within the fifteen (15) working days apprise the employee or designated representative requesting the record of

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the reason for the delay and the earliest date when the record can be made available.

1910.1020(e)(1)(ii)

The employer may require of the requester only such information as should be readily known to the requester and which may be necessary to locate or identify the records being requested (e.g. dates and locations where the employee worked during the time period in question).

..1910.1020(e)(1)(iii)

1910.1020(e)(1)(iii)

Whenever an employee or designated representative requests a copy of a record, the employer shall assure that either:

1910.1020(e)(1)(iii)(A)

A copy of the record is provided without cost to the employee or representative,

1910.1020(e)(1)(iii)(B)

The necessary mechanical copying facilities (e.g., photocopying) are made available without cost to the employee or representative for copying the record, or

1910.1020(e)(1)(iii)(C)

The record is loaned to the employee or representative for a reasonable time to enable a copy to be made.

1910.1020(e)(1)(iv)

In the case of an original X-ray, the employer may restrict access to on-site examination or make other suitable arrangements for the temporary loan of the X-ray.

1910.1020(e)(1)(v)

Whenever a record has been previously provided without cost to an employee or designated representative, the employer may charge reasonable, non-discriminatory administrative costs (i.e., search and copying expenses but not including overhead expenses) for a request by the employee or designated representative for additional copies of the record, except that

..1910.1020(e)(1)(v)(A)

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1910.1020(e)(1)(v)(A)

An employer shall not charge for an initial request for a copy of new information that has been added to a record which was previously provided; and

1910.1020(e)(1)(v)(B)

An employer shall not charge for an initial request by a recognized or certified collective bargaining agent for a copy of an employee exposure record or an analysis using exposure or medical records.

1910.1020(e)(1)(vi)

Nothing in this section is intended to preclude employees and collective bargaining agents from collectively bargaining to obtain access to information in addition to that available under this section.

1910.1020(e)(2)

"Employee and designated representative access" -

1910.1020(e)(2)(i)

"Employee exposure records."

1910.1020(e)(2)(i)(A)

Except as limited by paragraph (f) of this section, each employer shall, upon request, assure the access to each employee and designated representative to employee exposure records relevant to the employee. For the purpose of this section, an exposure record relevant to the employee consists of:

1910.1020(e)(2)(i)(A)(1)

A record which measures or monitors the amount of a toxic substance or harmful physical agent to which the employee is or has been exposed;

..1910.1020(e)(2)(i)(A)(2)

1910.1020(e)(2)(i)(A)(2)

In the absence of such directly relevant records, such records of other employees with past or present job duties or working conditions related to or similar to those of the employee to the extent necessary to reasonably indicate the amount and nature of the toxic substances or harmful physical agents to which the employee is or has been subjected, and

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1910.1020(e)(2)(i)(A)(3)

Exposure records to the extent necessary to reasonably indicate the amount and nature of the toxic substances or harmful physical agents at workplaces or under working conditions to which the employee is being assigned or transferred.

1910.1020(e)(2)(i)(B)

Requests by designated representatives for unconsented access to employee exposure records shall be in writing and shall specify with reasonable particularity:

1910.1020(e)(2)(i)(B)(1)

The record requested to be disclosed; and

1910.1020(e)(2)(i)(B)(2)

The occupational health need for gaining access to these records.

1910.1020(e)(2)(ii)

"Employee medical records."

1910.1020(e)(2)(ii)(A)

Each employer shall, upon request, assure the access of each employee to employee medical records of which the employee is the subject, except as provided in paragraph (e)(2)(ii)(D) of this section.

..1910.1020(e)(2)(ii)(B)

1910.1020(e)(2)(ii)(B)

Each employer shall, upon request, assure the access of each designated representative to the employee medical records of any employee who has given the designated representative specific written consent. Appendix A to this section contains a sample form which may be used to establish specific written consent for access to employee medical records.

1910.1020(e)(2)(ii)(C)

Whenever access to employee medical records is requested, a physician representing the employer may recommend that the employee or designated representative:

1910.1020(e)(2)(ii)(C)(1)

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Consult with the physician for the purposes of reviewing and discussing the records requested,

1910.1020(e)(2)(ii)(C)(2)

Accept a summary of material facts and opinions in lieu of the records requested, or

1910.1020(e)(2)(ii)(C)(3)

Accept release of the requested records only to a physician or other designated representative.

..1910.1020(e)(2)(ii)(D)

1910.1020(e)(2)(ii)(D)

Whenever an employee requests access to his or her employee medical records, and a physician representing the employer believes that direct employee access to information contained in the records regarding a specific diagnosis of a terminal illness or a psychiatric condition could be detrimental to the employee's health, the employer may inform the employee that access will only be provided to a designated representative of the employee having specific written consent, and deny the employee's request for direct access to this information only. Where a designated representative with specific written consent requests access to information so withheld, the employer shall assure the access of the designated representative to this information, even when it is known that the designated representative will give the information to the employee.

1910.1020(e)(2)(ii)(E)

A physician, nurse, or other responsible health care personnel maintaining employee medical records may delete from requested medical records the identity of a family member, personal friend, or fellow employee who has provided confidential information concerning an employee's health status.

1910.1020(e)(2)(iii)

Analyses using exposure or medical records.

1910.1020(e)(2)(iii)(A)

Each employer shall, upon request, assure the access of each employee and designated representative to each analysis using exposure or medical records concerning the employee's working conditions or workplace.

..1910.1020(e)(2)(iii)(B)

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1910.1020(e)(2)(iii)(B)

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), the employer shall assure that personal identifiers are removed before access is provided. If the employer can demonstrate that removal of personal identifiers from an analysis is not feasible, access to the personally identifiable portions of the analysis need not be provided.

1910.1020(e)(3)

"OSHA access."

1910.1020(e)(3)(i)

Each employer shall, upon request, and without derogation of any rights under the Constitution or the Occupational Safety and Health Act of 1970, 29 U.S.C. 651 "et seq.," that the employer chooses to exercise, assure the prompt access of representatives of the Assistant Secretary of Labor for Occupational Safety and Health to employee exposure and medical records and to analyses using exposure or medical records. Rules of agency practice and procedure governing OSHA access to employee medical records are contained in 29 CFR 1913.10.

1910.1020(e)(3)(ii)

Whenever OSHA seeks access to personally identifiable employee medical information by presenting to the employer a written access order pursuant to 29 CFR 1913.10(d), the employer shall prominently post a copy of the written access order and its accompanying cover letter for at least fifteen (15) working days.

..1910.1020(f)

1910.1020(f)

"Trade secrets."

1910.1020(f)(1)

Except as provided in paragraph (f)(2) of this section, nothing in this section precludes an employer from deleting from records requested by a health professional, employee, or designated representative any trade secret data which discloses manufacturing processes, or discloses the percentage of a chemical substance in mixture, as long as the health professional, employee, or designated representative is notified that information has been deleted. Whenever deletion of trade secret

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information substantially impairs evaluation of the place where or the time when exposure to a toxic substance or harmful physical agent occurred, the employer shall provide alternative information which is sufficient to permit the requesting party to identify where and when exposure occurred.

1910.1020(f)(2)

The employer may withhold the specific chemical identity, including the chemical name and other specific identification of a toxic substance from a disclosable record provided that:

1910.1020(f)(2)(i)

The claim that the information withheld is a trade secret can be supported;

1910.1020(f)(2)(ii)

All other available information on the properties and effects of the toxic substance is disclosed;

1910.1020(f)(2)(iii)

The employer informs the requesting party that the specific chemical identity is being withheld as a trade secret; and

1910.1020(f)(2)(iv)

The specific chemical identity is made available to health professionals, employees and designated representatives in accordance with the specific applicable provisions of this paragraph.

..1910.1020(f)(3)

1910.1020(f)(3)

Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a toxic substance is necessary for emergency or first-aid treatment, the employer shall immediately disclose the specific chemical identity of a trade secret chemical to the treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (f)(4) and (f)(5), as soon as circumstances permit.

1910.1020(f)(4)

In non-emergency situations, an employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under paragraph (f)(2) of this section, to a health professional,

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employee, or designated representative if:

1910.1020(f)(4)(i)

The request is in writing;

1910.1020(f)(4)(ii)

The request describes with reasonable detail one or more of the following occupational health needs for the information:

1910.1020(f)(4)(ii)(A)

To assess the hazards of the chemicals to which employees will be exposed;

1910.1020(f)(4)(ii)(B)

To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

1910.1020(f)(4)(ii)(C)

To conduct pre-assignment or periodic medical surveillance of exposed employees;

1910.1020(f)(4)(ii)(D)

To provide medical treatment to exposed employees;

1910.1020(f)(4)(ii)(E)

To select or assess appropriate personal protective equipment for exposed employees;

..1910.1020(f)(4)(ii)(F)

1910.1020(f)(4)(ii)(F)

To design or assess engineering controls or other protective measures for exposed employees; and

1910.1020(f)(4)(ii)(G)

To conduct studies to determine the health effects of exposure.

1910.1020(f)(4)(iii)

The request explains in detail why the disclosure of the specific chemical identity is essential and that,

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in lieu thereof, the disclosure of the following information would not enable the health professional, employee or designated representative to provide the occupational health services described in paragraph (f)(4)(ii) of this section;

1910.1020(f)(4)(iii)(A)

The properties and effects of the chemical;

1910.1020(f)(4)(iii)(B)

Measures for controlling workers' exposure to the chemical;

1910.1020(f)(4)(iii)(C)

Methods of monitoring and analyzing worker exposure to the chemical; and

1910.1020(f)(4)(iii)(D)

Methods of diagnosing and treating harmful exposures to the chemical;

1910.1020(f)(4)(iv)

The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and

..1910.1020(f)(4)(v)

1910.1020(f)(4)(v)

The health professional, employee, or designated representative and the employer or contractor of the services of the health professional or designated representative agree in a written confidentiality agreement that the health professional, employee or designated representative will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (f)(9) of this section, except as authorized by the terms of the agreement or by the employer.

1910.1020(f)(5)

The confidentiality agreement authorized by paragraph (f)(4)(iv) of this section:

1910.1020(f)(5)(i)

May restrict the use of the information to the health purposes indicated in the written statement of need;

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1910.1020(f)(5)(ii)

May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

1910.1020(f)(5)(iii)

May not include requirements for the posting of a penalty bond.

1910.1020(f)(6)

Nothing in this section is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

1910.1020(f)(7)

If the health professional, employee or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the employer who provided the information shall be informed by the health professional prior to, or at the same time as, such disclosure.

..1910.1020(f)(8)

1910.1020(f)(8)

If the employer denies a written request for disclosure of a specific chemical identity, the denial must:

1910.1020(f)(8)(i)

Be provided to the health professional, employee or designated representative within thirty days of the request;

1910.1020(f)(8)(ii)

Be in writing;

1910.1020(f)(8)(iii)

Include evidence to support the claim that the specific chemical identity is a trade secret;

1910.1020(f)(8)(iv)

State the specific reasons why the request is being denied; and,

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1910.1020(f)(8)(v)

Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

1910.1020(f)(9)

The health professional, employee, or designated representative whose request for information is denied under paragraph (f)(4) of this section may refer the request and the written denial of the request to OSHA for consideration.

1910.1020(f)(10)

When a health professional, employee, or designated representative refers a denial to OSHA under paragraph (f)(9) of this section, OSHA shall consider the evidence to determine if:

..1910.1020(f)(10)(i)

1910.1020(f)(10)(i)

The employer has supported the claim that the specific chemical identity is a trade secret;

1910.1020(f)(10)(ii)

The health professional employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and

1910.1020(f)(10)(iii)

The health professional, employee or designated representative has demonstrated adequate means to protect the confidentiality.

1910.1020(f)(11)

1910.1020(f)(11)(i)

If OSHA determines that the specific chemical identity requested under paragraph (f)(4) of this section is not a "bona fide" trade secret, or that it is a trade secret but the requesting health professional, employee or designated representatives has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means for complying with the terms of such agreement, the employer will be subject to citation by OSHA.

..1910.1020(f)(11)(ii)

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1910.1020(f)(11)(ii)

If an employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health needs are met without an undue risk of harm to the employer.

1910.1020(f)(12)

Notwithstanding the existence of a trade secret claim, an employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

1910.1020(f)(13)

Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.

1910.1020(g)

"Employee information."

1910.1020(g)(1)

Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section of the following:

1910.1020(g)(1)(i)

The existence, location, and availability of any records covered by this section;

1910.1020(g)(1)(ii)

The person responsible for maintaining and providing access to records; and

..1910.1020(g)(1)(iii)

1910.1020(g)(1)(iii)

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Each employee's rights of access to these records.

1910.1020(g)(2)

Each employer shall keep a copy of this section and its appendices, and make copies readily available, upon request, to employees. The employer shall also distribute to current employees any informational materials concerning this section which are made available to the employer by the Assistant Secretary of Labor for Occupational Safety and Health.

1910.1020(h)

"Transfer of records."

1910.1020(h)(1)

Whenever an employer is ceasing to do business, the employer shall transfer all records subject to this section to the successor employer. The successor employer shall receive and maintain these records.

1910.1020(h)(2)

Whenever an employer is ceasing to do business and there is no successor employer to receive and maintain the records subject to this standard, the employer shall notify affected current employees of their rights of access to records at least three (3) months prior to the cessation of the employer's business.

1910.1020(h)(3)

Whenever an employer either is ceasing to do business and there is no successor employer to receive and maintain the records, or intends to dispose of any records required to be preserved for at least thirty (30) years, the employer shall:

..1910.1020(h)(3)(i)

1910.1020(h)(3)(i)

Transfer the records to the Director of the National Institute for Occupational Safety and Health (NIOSH) if so required by a specific occupational safety and health standard; or

1910.1020(h)(3)(ii)

Notify the Director of NIOSH in writing of the impending disposal of records at least three (3) months prior to the disposal of the records.

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1910.1020(h)(4)

Where an employer regularly disposes of records required to be preserved for at least thirty (30) years, the employer may, with at least (3) months notice, notify the Director of NIOSH on an annual basis of the records intended to be disposed of in the coming year.

1910.1020(i)

"Appendices." The information contained in appendices A and B to this section is not intended, by itself, to create any additional obligations not otherwise imposed by this section nor detract from any existing obligation.

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HOT WORK PERMIT PROGRAM

PURPOSE:

The purpose of this procedure is to ensure that our employees, contractors and company property are properly protected against fire, explosion, and other dangers resulting from hot work (cutting and welding).

SCOPE:

The procedure covers any oxygen fuel gas and electric arc cutting and welding operation that could become a source of ignition in a hazardous area. The procedure applies to all employees and contractors working in this facility. Should hot work include hot tapping, the procedures and precautions are to be expanded as outlined in API 2201 referenced below.

REFERENCE:

A) 29 CFR 1910.119 Process Safety Management of Highly Hazardous Chemicals, paragraph (k).

B) 29 CFR 1910.252 (a) Welding, Cutting & Brazing--General Requirements.

C) NFPA 51, Standard for the Design and Installation of Oxygen Fuel Gas Systems for Welding, Cutting and Allied Processes.

D) NFPA 51B, Standard for Fire Prevention in Use of Cutting and Welding Processes.

E) ANSI Z491, American National Standard Safety in Welding and Cutting.

F) API 2201, Procedures for Welding or Hot Tapping on Equipment Containing Flammables.

DEFINITIONS:

The following is an alphabetical listing defining terms and abbreviations as used throughout this document with which a user of this procedure should be familiar. Where applicable, examples are given in order to provide clarification. These examples are intended to show typical issues which

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may arise when following the hot work permit procedure. These issues are not intended to be an all encompassing list within the scope of this procedure. Rather, it is intended to provide guidance when issuing the hot work permits.

If in doubt whether to issue a hot work permit, it is recommended that a permit be issued subject to the provisions of this procedure.

Catastrophic Release:

A major release of ammonia or other hazardous chemicals resulting from uncontrolled developments which leads to, or could have led to, serious danger to persons both within and outside the work place.

Combustible:

Any and all materials that could ignite. Common examples include but are not limited to plastics (belts, tray/cups, gears, chains, etc), paper products, wood, etc.

Cutter/Welder:

The individual performing the hot work operations.

Fire Watch:

A fire watch is required during all hot work outside the designated engineering welding station. The fire watch shares the responsibility for fire/safety with the cutter/welder. The fire watch should maintain a constant vigil during the operation (including lunch and coffee breaks) to watch for stray sparks, ignition sources, or other fire hazards. This individual should be specifically trained in the use of a fire extinguisher, small hose and/or bucket of sand and should stay with this equipment. He/she should be familiar with the facilities and also know how to sound the fire alarm.

Hazard:

A potential for an accident with undesirable consequences, usually involving a loss of containment of flammable, combustible, highly toxic (i.e., ammonia) or reactive materials.

Hazardous Location:

A hazardous location is one where flammable gases, vapors, or combustible dust are (or may be) present in the air in sufficient quantities to provide a fire or explosion.

Hot Work Operations:

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Any operation that could cause a source of ignition in a hazardous area. A hot work permit is required for any hot work operations.

Process:

All activities that involve the receipt, storage, handling, compression, or movement of ammonia, including utility systems, required for the safe operation of the ammonia facility.

Source of Ignition:

A source of ignition is a flame, tool spark, static electric charge, or electric spark that would cause a fire or explosion.

Example:

•Welding, burning, brazing, soldering, or any use of an open flame;

•Metal removing such as drilling, chipping, abrasive cutting, milling, grinding, etc.;

•Internal combustion engines;

•Explosive-actuated fastening tools;

•Cutting or chipping concrete with or without reinforcements:

•Operating non-explosion-proof equipment and tools in an explosion-proof area. Includes battery powered equipment and tools;

•Operating any cleaning device utilizing a metal or any other material contract that can produce sparks; and,

•Work on live electrical circuits of any voltage in hazardous locations.

PROCEDURES:

The hot work permit procedures that should be followed can be outlined by the following major steps:

1) Initiating a Hot Work Permit
2) Issuing a Hot Work Permit
3) Performing Hot Work
4) Completing the Hot Work Permit Procedure

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Several different persons and departments may also be involved. The following information describes the responsibilities at various levels in the organization for the major steps in the hot work permit procedure.

1.0 INITIATING A HOT WORK PERMIT

1.1 The first step in the hot work permit procedure is the identification of the need for a hot work permit. The request for a hot work permit may be made by any facility Maintenance employee or by any outside contractor completing hot work outside the designated hot work area located in the engineering department. The request for a hot work permit should be submitted prior to work beginning (verbally or in writing) to the Safety Coordinator, Maintenance Supervisor or designee on the day that the hot work is to be performed.

2.0 ISSUING A HOT WORK PERMIT

2.1 EHS, Maintenance Supervisor, or designee has the responsibility to fill out the hot work permit (see *Form*) once a request for a hot work permit is made. The permit should be filled out before the hot work is started. EHS, Maintenance employee, or designee should inspect the work area before filling out the hot work permit.

2.2 Section 1 of the hot work permit should show the date and time that the work will be performed, the location, a short description of the work to be performed, the name of the cutter/welder, and the name of the fire watch. A fire watch is required for all hot work performed outside the engineering shop designated area. The hot work permit is valid only for the job and the time listed in this section no longer then one shift or 8 hours.

2.3 The next step is for the EHS, Maintenance Supervisor, or designee to review the list of hot work precautions with the cutter/welder and with the fire watch (see *Form*). These precautions are summarized in checklist form on the hot work permit (see Section 2 of Form), posted in the engineering shop, and to be posted on the equipment where the work is to be performed. Note that the hot work precautions outlined in Section 2 of the form are minimum precautions; additional measures for safety of personnel or property may be taken as deemed necessary.

2.4 EHS, Maintenance Supervisor, or designee **assures all necessary hot work precautions have been taken, he/she should initial each item in Section 2 of the permit, sign the permit, and then issue it to the cutter/welder.** The cutter/welder and the fire watch should sign Section 1 indicating that they have reviewed the hot work precautions with the supervisor and understand their responsibilities. EHS, Maintenance Supervisor, or designee, should make and keep a copy of the permit.

3.0 PERFORMING HOT WORK

3.1 The cutter/welder should affix the hot work permit and the hot work precautions to a visible place in the work area. The permit should remain in this place until the hot work is completed. The

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cutter/welder is responsible for conducting the hot work within the authorized parameters and time limit set by the permit. Hot work may continue as long as conditions remain safe and no new hazards have been introduced.

3.2 The following precautions should be taken when performing any hot work operations at the facility:

•Perform hot work in the engineering shop except when the job cannot be moved to the shop.

•Use only equipment that is in good condition. Valves, regulators, hoses and torches should be thoroughly checked.

•Do not perform portable welding, cutting, or other hot work in a building where sprinklers are out of service.

•Move combustibles at least 35 feet from hot work operations. If combustibles cannot be moved, they should be protected by flame proof curtains or covers.

•Do not perform hot work in or on any vessels containing flammable or combustible materials including residues, until they have been disconnected or blanked, completely cleaned out, and purged. Safe Work Practices for Opening of System should be adhered to.

•Check the atmosphere for combustible gases or vapors, where necessary, using reliable combustible gas detection equipment. If there is a chance of gas release during hot work operations, continuous-duty portable combustible gas detectors should be used to continuously monitor the area.

•Ensure that a fire extinguisher, a small hose and/or bucket of sand are readily available for instant use in the area.

•Do not perform hot work until surrounding floors have been swept clean, and, if combustible, wet down with water.

•Do not perform hot work until all wall and floor openings within 35 feet of the operations have been tightly covered or otherwise protected with metal guards or flame proofed tarps.

•Do not perform hot work until a fire watch has been assigned to watch for dangerous sparks in the area and on floors above and below the operation.

•Secure gas cutting and welding cylinders so they will not be damaged and replace protective caps (and close gas supply valves) on all cylinders not actually in use.

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•Carefully and securely connect the ground clamp when using electrical arc welding equipment. Since improperly made ground can be a source of ignition, the ground clamp should be connected as close to the work as possible so that it may easily be observed.

•Use portable stands to elevate welding hose or cable off floor areas to avoid damage to the hose or cable.

•Ensure adequate ventilation is maintained during hot work operations to assure that personnel are not exposed to harmful fumes. This may include positioning of an exhaust blower close to the point of the exhaust fumes. Respiratory protection should also be considered.

•Remove all electrodes from the holders, carefully locate them so that accidental contact cannot occur, and disconnect the welding machine from the power source if hot work is to be suspended for any substantial period (e.g., lunch or overnight).

3.3 The fire watch shares the responsibility for fire/safety with the cutter/welder. The fire watch should maintain a constant vigil during the operation (including lunch and coffee breaks) to watch for stray sparks, ignition sources, or other fire hazards. This individual should be specifically trained in the use of a fire extinguisher, small hose and/or bucket of sand and should stay with this equipment. He/she should be familiar with the facilities and also know how to sound the fire alarm. It is the fire watch's responsibility to try to extinguish any fires if they occur, as long as they are within the capacity of the equipment available, or otherwise sound the fire alarm.

The EHS, Maintenance Supervisor, or designee, should inspect the work area during the hot work operations to ensure that the conditions of the hot work permit are being fulfilled.

4.0 COMPLETING THE HOT WORK PERMIT PROCCEDURE

4.1 When the hot work is completed, the cutter/welder and the fire watch should remain for at least another 30 minutes, carefully inspecting the work area and adjacent areas for the possibility of any smoldering fires. This inspection extends to floors above and below the work area and to adjacent rooms.

4.2 Barring any fires, the cutter/welder then removes the hot work permit. The cutter/welder should sign Section 3 of the permit, write the completed time and then return the permit to the EHS, Maintenance Supervisor, or designee.

4.3 The EHS, Maintenance Supervisor, or designee, the cutter/welder, or the fire watch should return to the area two to four hours later; smoldering fires may take that long to become apparent. After this final inspection, the EHS, Maintenance Supervisor, or designee, should sign Section 3 of the hot work permit, write the time the system was inspected, and retain the permit in the maintenance files as a record of the work.

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5.0 PERSONNEL RESPONSIBILITIES

5.1 The following describes the various persons/departments who may be involved in the hot work permit procedure, and summarizes their responsibilities.

A. Originator

•Identifies the need for a hot work permit if outside the designated area located in the engineering shop;

•Submits hot work permit request (verbally or in writing) to the EHS, Maintenance Supervisor, or designee, and

•Works with other departments, as assigned, during the implementation of the hot work permit procedure.

B.

•Has overall responsibility for ensuring that the hot work permit procedure is followed at the facility.

•Inspects the work area before filling out the hot work permit;

•Assigns a fire watch;

•Completes Sections 1 and 2 of the hot work permit after completing inspection of work area;

•Reviews the list of hot work precautions with the cutter/welder and the fire watch;

•Specifies any additional precautions which may be necessary for the hot work permit;

•Signs the hot work permit and issues it to the cutter/welder when assured that all necessary hot work precautions have been taken;

•Inspects the work area during the hot work operations to ensure that the conditions of the hot work permit are being fulfilled;

•Returns to the hot work area (or direct cutter/welder or fire watch to return to the area) two to four hours later to inspect for smoldering fires; and,

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•Signs Section 3 and file the hot work permit after the final site inspection has been completed.

C. Cutter/Welder

•Reviews the list of hot work precautions with the Safety Coordinator, Maintenance Supervisor, or designee, and signs Section 1 of the permit;

•Affixes the hot work permit and the hot work precautions to a visible place in the work area;

•Conducts the hot work operations within the authorized parameters and time limit set by the hot work permit;

•Stops hot work operations if any new hazards are introduced to the process;

•Returns to hot work area two to four hours later to inspect for smoldering fires if instructed to do so by the Safety Coordinator, Maintenance Supervisor, or designee.

D. Fire Watch

•Reviews the list of hot work precautions with the Safety Coordinator, Maintenance Supervisor, or designee, and signs Section 1 of the permit;

•Maintains a constant vigil during the hot work operations (including lunch and coffee breaks) to watch for stray sparks, ignition sources, or other fire hazards;

•Ensures that a fire extinguisher, a small hose and/or bucket of sand are readily available for instant use in the area;

•Stops hot work operations if any new hazards are introduced to the process;

•Extinguishes any fires if they occur as long as they are within the capacity of the equipment available, or otherwise sounds the fire alarm;

•Remains in the area for at least 30 minutes after work is completed, carefully inspecting the work area and adjacent areas for any smoldering fires; and,

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•Returns to hot work area two to four hours later to inspect for smoldering fires if instructed to do so by the Safety Coordinator, Maintenance Supervisor, or designee.

6.0 PERSONNEL

6.1 The Safety Coordinator has the ultimate responsibility for the hot work permit process. He/she may designate other individuals to be able to authorize hot work.

6.2 The following personnel have been trained and are qualified to serve in the role of Fire Watcher when hot work is being performed:

Name	Position/Company	Phone Number

7.0 DOCUMENT MANAGEMENT

7.1 The only document associated with hot work permit procedures is the permit itself. Documentation should be managed as follows:

7.2 Hot Work Permit

Safety Coordinator, Maintenance Supervisor, or designee retains the supply of blank permits. Upon request he/she fills out Sections 1 and 2 of the permit and signs it to authorize the work. The permit may then be signed by the cutter/welder and one copy of both sides of the permit is made. Safety Coordinator, Maintenance Supervisor, or designee retains the copy and cutter/welder takes the original to the job site where it is posted. Upon successful completion of the work the Supervisor or Fire Watcher signs Section 3 of the permit. The completed permit is then filed as follows:

Original – Welding Program Binder

8.0 FORMS

A two-sided hot work permit consisting of three sections has been prepared and is included herein.

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HOT WORK PERMIT FORM

(Yellow Card Stock Sample If Used)

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HOT WORK PERMIT
FOR CUTTING AND WELDING
WITH PORTABLE GAS OR ARC EQUIPMENT

SECTION 1			or designee:	
	Date:			Permit Expires date/time:
	Building:			Work Date:
	Dept.:			Floor:
Type of Stainless Steel: **Type of Equipment:**		**Actual Burn Time:** _____ **Seconds and/or** _____ **Minutes**		

Work to be Done:
Type of Work: [ ] Cutting [ ] Welding [ ] Retrofit [ ] New
Work Performed By: [ ] In House People [ ] Outside Contractor(s)
Cutter/Welder Name: Fire Watch Name:

Is work to be done on ammonia refrigeration piping or equipment? [ ] Yes [ ] No
Is fire watch required (required for all hot work outside engineering designated area)? [ ] Yes [ ] No
Is there overhead work? [ ] Yes [ ] No
Relocation of combustible materials including plastic components? [ ] Yes [ ] No
Protective covering to protect unmovable combustibles? [ ] Yes [ ] No
Is there equipment to convey sparks? [ ] Yes [ ] No
Type of fire extinguisher required. [ ] A [ ] B [ ] C [ ] ABC

Was required completed – Firewatch training annually and hot work procedure triennial? [ ] Yes [ ] No

Describe precautions required with any combustible materials:

[ ] To ensure the **floors** are clear or protected from combustible fires we completed the following:

[ ]To ensure the **walls and ceiling** are clear or protected from combustible fires we completed the following:

[ ] To ensure components on and around equipment are clear or protected from combustible fires we completed the following:

[ ] Yes [ ] No – There are no **plastics** or other combustibles in area (within 35 feet) that are not removed or protected?

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SECTION 2

ATTENTION

Before approving any cutting and welding permit, the chief engineer or assistant chief engineer or designee shall inspect the work area and confirm that precautions have been taken to prevent fire in accordance with Hot Work Procedures.

PRECAUTIONS

[ ] Sprinkler in service.
[ ] Cutting and welding equipment in good repair.

WITHIN 35 FT. OF WORK AREA

[ ] Floors swept clean of combustibles.
[ ] Combustible floors wet down, covered with damp sand, metal or other shields.
[ ] No combustible material or flammable liquids in the area including unprotected plastics components.
[ ] Combustible component (plastics) and flammable liquids protected with covers, guards or metal shields.
[ ] All wall and floors openings covered.
[ ] Covers suspended beneath work to collect sparks.

WORK ON WALLS OR CEILINGS

[ ] Construction noncombustible and without combustible covering.
[ ] Combustibles moved away from opposite wall.

WORK ON ENCLOSED EQUIPMENT

(Tanks, containers, piping, ducts, dust collectors, etc.)

[ ] Equipment cleaned of all combustibles.
[ ] Opening of ammonia refrigeration systems practices followed.
[ ] Containers properly purged of flammable liquid and vapors.

FIRE WATCH

[ ] To be provided during and 30 minutes after operation.
[ ] Supplied with fire extinguishers and small water hose.
[ ] Trained in use of equipment and in sounding fire alarm.

After the above inspection is completed sign below to authorize the work to begin:

Chief or Assistant Chief Engineer or designee:_____ Date:_____

Welder/Cutter:_____ Date:_____

Fire Watch:_____ Date:_____

SECTION 3

FINAL CHECK-UP

Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found fire safe.

Site Inspection Date/Time:	Issued By:
Welder/Cutter:	Fire Watcher:

THIS FORM SHOULD BE KEPT ON FILE FOR ONE YEAR AFTER ALL WORK IS COMPLETED.

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Mosquito Control Program

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ALEXANDRIA RENEW ENTERPRISES

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I. Background

Mosquito Biology

Mosquitoes are of the order Diptera, or flies. They are found worldwide from the tropics to the Artic. Mosquitoes undergo complete metamorphosis, egg, larvae, pupae, and adult. They are important to humans in the adult stage, all other stages occur in water. There are about three thousand species of mosquitoes worldwide, approximately 170 species in North America. Breeding sites, biting preferences, time of day they bite, and ability to transmit diseases, vary with the species.

Breeding occurs in any area there is standing water such as stagnant ponds, discarded tires, tree stumps, etc. The more rainfall per season, the more numerous the mosquitoes. With mild winters and excessive rainfalls, the possibility of a troublesome mosquito season is more likely. This will create a higher possibility of disease carrying mosquitoes. The Alexandria City Health Department has announced in July 2006 that trapped mosquitoes in the 4200 block of Eisenhower Ave. tested positive for West Nile Virus.

West Nile Virus

There are several species of mosquitoes that can carry the disease, not the least of which is the Culex pipiens, a common mosquito in the United States. This disease was first isolated in 1937 in a woman's blood in the West Nile province of Uganda. Since then there have been outbreaks of epidemic proportions in Israel in the 50's, France in the 60's, thousands of cases in South Africa in the 70's, New York City in the 90's and 2000 and now in the City of Alexandria.

Wild and domestic birds are the most common vertebrate hosts for the West Nile virus, thus making the disease extremely mobile. Crows, chickens, pigeons, and hawks are among those carriers of the virus which once infected and cross state lines, are bitten by a local mosquito which bites and infects a local crow. As you can see it’s movement is rapid. Quarantine is next to impossible.

What can be done? The City of Alexandria’s Health Department has AlexRenew on its list of sites to insure compliance with the city’s mosquito control plan. The Health Department performs periodic surveillance and treatment at the Authority. The City Health Department will carefully monitor and report newly discovered outbreaks within the city and on the plant. Treatments to standing water at AlexRenew will be made as deemed necessary by the Health Department and AlexRenew staff. As a facility within the city, AlexRenew is committed to being proactive in the control of mosquitoes. Every employee must do their part in controlling the population of mosquitoes on the facility.

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II. RESPONSIBILITIES

A. Department Directors will be responsible for implementing and ensuring compliance with AlexRenew's mosquito control program within their department.

B. The AlexRenew Safety Coordinator has the following responsibilities under AlexRenew's mosquito control program:

1. To continue to build and develop, AlexRenew's mosquito control program.
2. Coordinate with the Alexandria Health Department, as necessary, for any treatment or surveillance needs that would be in addition to what is automatically in place.
3. Respond to all AlexRenew related concerns dealing with mosquito infestation on Authority property.
9. Ensure outside contractors hired to perform work at AlexRenew facilities are aware of the Authority Mosquito Control Plan.

C. Contract Specialist

1 Is AlexRenew’s contact with the City Health Department for inspections and treatment.
2. The Contract Specialist will accompany the Health Department inspectors while they are on Authority property.
3. Immediately notify Team, Shift Leaders or the Engineer Assistant of any areas where larva may develop and actions needed to be taken to reduce the risk of infestation.
2. Document inspections and treatment.
3. Contacting the Safety Coordinator whenever major problems develop pertaining to the Authority Mosquito Control Program.

D. AlexRenew Team/ Shift Leaders and other Supervisors have the following responsibilities under AlexRenew's Mosquito Control Program

1. Clean and maintain catch basins that show evidence of holding water both in and outside of buildings and tunnels.

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2. Collect and properly discard all useless artificial containers that water may collect in such as cans, bottles, buckets, 55 gallon drums, old machinery, valves, pipes, pumps ext.
3. Cover or turn over items that will collect water that can not be disposed of immediately.
4. Inspect and clean rain gutters and down spouts regularly.
5. Inspect and dewater areas such as secondary containment tanks and air plenums after rain events.
6. Fill or drain low places where water may accumulate and stand for more than a week.
7. Properly maintain the fish pond above building E.

If drainage is a major problem or if drainage ditches remain damp, use a larvicide, (mosquito dunks or Altosid). These are biological or growth regulators and are not harmful to fish, humans or other animals. The two pictures below are ideal situations for larvicides.

E. Warehouse:

1. Maintain an adequate supply of larvicide on hand at all times during summer months to issue to teams and shifts as needed.
2. Maintain an adequate supply of insect repellent in both spray and towelette form.
3. Maintain an adequate supply of insecticide in both individual sprays and spray containers for large areas.

F. Technical Services:

1. Assist AlexRenew Team Leaders when requested to resolve drainage issues.
2. Ensure outside contractors hired to perform work at AlexRenew facilities comply with the Authority's Mosquito Control Plan.

G. All AlexRenew employees will be responsible for:

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1. Become familiar with and complying with AlexRenew's mosquito control program.
2. Notifying their supervisor when they notice areas at AlexRenew that need attention to reduce or eliminate standing water.
3. Properly discard all useless artificial containers that water may collect in such as cans, bottles, buckets, 55 gallon drums, old machinery, valves, pipes, pumps or other items that will collect water after a rain event.
4. Cover or turn over items that will collect water that cannot be disposed of immediately.
5. Inspect and clean rain gutters and down spouts regularly.
6. Inspect and dewater areas such as secondary containment tanks and air plenums after rain events.
7. Fill or drain low places where water may accumulate and stand for more than a week.

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SUBJECT:
Motor Vehicle Safety

Policy Bulletin
Number: HR - 12
Date: 09/2009
Revised: 4/2016
Supersedes: E-1; E-7

Purpose

It is the policy of Alexandria Renew Enterprises (the "Company") to establish procedures for the safe use of all vehicles owned, leased, or rented by the Company. This includes responsibilities, safety protocols, and vehicle maintenance. This policy also governs parking privileges for staff, contractors, and visitors while on the property.

Motor Vehicle Record

The Company reserves the right to annually audit all employee driving records. Where available, the Department of Motor Vehicles may monitor and electronically report any serious violations as they occur.

Drivers

- At no time is anyone driving or riding in a Company vehicle allowed to smoke.
- Drivers must possess a valid driver's license. If an employee licensed is currently suspended or revoke they are strictly prohibited from operating a company vehicle. It is the responsibility of the employee to notify the Human Resource department if their license is suspended or revoked immediately upon their notification.
- Do not drive or park a vehicle on Company property without a valid state or District of Columbia driver's license. This does not apply to those with a restricted license that allows the individual to drive to and from work. If an employee has a restricted license, the court order allowing the restricted driving privileges must be presented to Human Resources prior to driving or parking on the Company property.
- Know and obey state and local vehicle laws applicable to the operation of their vehicle.
- Wear safety belts at all times while operating or riding in a vehicle or any other vehicle equipped with safety belts. In addition, all passengers riding in a Company owned vehicles equipped with safety belts are required to use them.
- Operate the vehicle in a professional manner and with courtesy to other motorists and pedestrians.
- Exercise defensive driving techniques.
- Attend periodic Driver Improvement/Defensive Driving courses provided by the Company.
- Not operate a vehicle when physically or mentally fatigued or when using a prescribed medication that could impact safe operation.
- Do not use cell phones or any of the cell phone's features, such as texting while operating a Company motor vehicle. Ensure the safety of all Company staff and property.
- Observe posted signs and speed limits.
- Complete required documentation related to fueling or tracking mileage.
- Employees are obligated to report any driving citations immediately. Failure to report the driving citation may result in disciplinary action up to and including termination.

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Driving Offenses
Persons with the following violation(s) on their driving record will be prohibited from driving the Company vehicles for up to 2 years or until 2 years has past the initial prohibiting violation date. This list is not all inclusive and is subject to change without notice.

1. One serious violation during the past two (2) years. Serious violations include the following:
    - Driving while impaired by or under the influence of alcohol or drugs;
    - Homicide, negligent homicide, or involuntary manslaughter by vehicle;
    - Fleeing or attempting to elude police officers;
    - Hit and run or failure to stop after an accident;
    - Evading responsibility after an accident; or

2. Three of the following occurrences or a combination of those listed above and within this section during the past two (2) years:
    - Reckless or negligent driving
    - Speeding
    - Speed greater than reasonable or prudent or too fast for conditions;
    - Driving without a license or while license is suspended or revoked;
    - Failure to yield;
    - Failure to obey traffic sign or signal;
    - Improper backing, turning, or passing;
    - Following too closely;
    - Careless operation of vehicle;
    - Any other moving violation; or
    - “At-fault" accident.

Exceptions may be made if an employee can show evidence of completion of a driver improvement course approved by the Department of Motor Vehicles for the violations in question. This may require reinstatement of points issued for the offense. Any change in status concerning the above must be immediately reported to Human Resources by the affected employee.

Accidents
If a vehicle is involved in an accident, the employee must satisfy all state and local legal requirements and report the incident immediately to Human Resources. If another vehicle is involved, the employee must obtain contact information from the other party and any applicable witnesses. A written report must be submitted to Human Resources within twenty-four (24) hours of the incident. *(Reference Form: Vehicle Accident Report)*

Employees injured in an accident will follow procedures for medical treatment as outlined in the Workers Compensation Policy.

In the event that a contractor, vendor, guest or any other type of non-Company personnel is injured in an accident, the medical costs to treat those injuries may be covered by the Company’s Automobile coverage or other policies applicable to the non-Company personnel.

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Each accident report and scene will need to be individually assessed on a case-by-case basis to determine the appropriate primary policy for medical injuries and/or the coordination of benefits. A description of the injuries and the contact information of all involved parties should be included in the Vehicle Accident Report Form which is submitted to Human Resources. Copies of the Vehicle Accident Report Form are kept in the glove compartment of each vehicle.

If an accident occurs between an employee, contractor, vendor or visitor with their privately owned vehicles while on company property, the involved participants should follow the same course of action that they would follow if the accident had occurred on non-company property, such as a highway. The company is not responsible.

Fueling of Vehicles

All fueling of the Company vehicles will be conducted at the nearest and most reasonably priced self-serve gas station. Gas credit cards are available for each vehicle on the key rings. Gas credit cards are designated for a specific vehicle and should be only used for the designated vehicle. The Company vehicles should be refueled by the user when the fuel gauge reaches or is below one quarter tank of fuel remaining before the vehicle is returned to the facility.

Parking

Free parking is provided for all employees, select contractors, vendors, and visitors. Individuals park at their own risk.

- No employee at the Company has an assigned parking space.
- Persons are to park in the designated parking areas only. Appropriate designation is required to park in the handicapped spots on the plant.
- The Company is not responsible for any damage or theft to personal vehicles or property unless caused by the Company personnel driving the Company vehicles or equipment in a negligent manner.
- Employees are not to work on personal vehicles (including washing and waxing, oil changes or simple maintenance repairs) on the Company property at any time except as authorized in specific situations as outlined elsewhere in this parking policy.
- If an employee's vehicle does not start, he/she may look for the problem and make minimum adjustments only (i.e., jump start, tighten loose wires, etc.). No repairs are to be made on the Company property. Employees should call for a tow truck and advise their supervisor.
- If a vehicle tire is low or flat, the employee's supervisor or shift leader on duty may arrange that air be inserted into the tire if available, so that the vehicle can be driven to a garage for repair or the employee can change it after working hours by arrangement with his/her supervisor or shift leader on duty.
- Personal vehicles may not be left unattended on the Company property for more than 24 hours without notice to the supervisor, the Shift Leaders on duty during the time the vehicle will be parked, and Coordinator.
- Employees are not to park in such a way that traffic or deliveries would be disrupted or blocked.
- Any vehicle found in violation of the Company rules may be towed at the owner's expense without further warning. Owners' expenses may include towing and storage charges. Once the tow truck the Company has been called, the owner of the vehicle becomes liable for any charges incurred, even if the car is moved between the time the call is made and the arrival of the tow truck and whether or not the car is actually towed. If the owner arrives on the scene when the tow truck arrives, and the vehicle is in the process of being hooked up, it may still be towed. Verbal or physical abuse of towing or

The Company personnel will not be tolerated under any circumstances. Should this happen, the Police may be called immediately, a complaint lodged with them and charges filed. The Company is not responsible for privately owned vehicles that are towed from the plant for any reason, including repossession.

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DOCUMENT APPROVAL/CHANGE HISTORY RECORD

Issue Date	Approvals		Change Description
09/2009	Jeff Pratt Safety Manager/Process Owner		Initial Release
12/2012	Wendy Criswell HR Supervisor/Process Owner	Cortlin Davidson Chief Human Resources Officer	Updated with new trade name & logo; incorporated E-1 and E-7 policies together as one policy
03/2013	Johnnie Wallace Environmental Health & Safety Manager	Cortlin Davidson Chief Human Resources Officer	Updated policy by changing restrictions that prohibit drivers.
04/2016	Johnnie Wallace Environmental Health & Safety Manager	Lisa Van Riper Chief Enterprise Communications	Clarified prohibited drivers timeframes. Updated fueling of vehicles with Fleetmatic gas card procedures.

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-1.0 Occupational Health & Safety Policy Procedure

Person responsible: Safety Coordinator

Document location: OHSMS SharePoint

Original issue date: 01/2020

Version Number: 0000

Revisions

Rev. No.	Date	Description
0000	12/2019	Original Document

Recurring action items

Activity	Responsibility	Frequency
1. Review and revise the procedure as necessary.	Safety Coordinator	Annually

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6.0 References / Related Documents

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-1.0 Occupational Health & Safety Policy Procedure

1.0 PURPOSE

1.1 The purpose of this procedure is to establish practices related to the development and implementation of the Occupational Health & Safety Policy for Alexandria Renew Enterprises.

2.0 SCOPE

2.1 The Occupational Health & Safety Policy recognizes that the protection of the health and safety of all Alexandria Renew Enterprises employees, contractors, vendors, visitors, and clients is of paramount importance.

2.2 The Occupational Health & Safety Policy defines the occupational health & safety commitments of Alexandria Renew Enterprises, establishes the framework for setting goals and objectives, and provides guidance for the development, management and maintenance of the OHSMS.

3.0 DEFINITIONS

3.1 OHSMS – Occupational Health and Safety Management System.

4.0 RESPONSIBILITY

4.1 The Chief Executive Officer/General Manager provides executive leadership in the development, promulgation, and implementation of the AlexRenew Occupational Health & Safety Policy and the approval of this program.

4.2 The Safety Committee provides recommendations for revisions to the Occupational Health & Safety Policy, ensuring the policy is adhered to during decision making processes, and implementing the policy through all activities, products and services of Alexandria Renew Enterprises.

4.3 The Safety Coordinator is responsible for documenting the Occupational Health & Safety Policy, maintaining meeting minutes to provide objective evidence of the process used to adopt or revise the Occupational Health & Safety Policy by Alexandria Renew Enterprises, and ensuring the Occupational Health & Safety Policy is available to the public.

4.4 Supervisors are responsible for providing feedback to the Safety Committee on the suitability of the Occupational Health & Safety Policy and communicating the policy to

their respective staff.

5.0 PROCESS

5.1 The Occupational Health & Safety Policy includes a commitment on behalf of Alexandria Renew Enterprises for continual improvement. The Occupational Health & Safety Policy includes a commitment to the protection of Alexandria Renew Enterprises employees, contractors, visitors, and customers. The Occupational Health & Safety Policy also includes a commitment to comply with applicable health and safety legal requirements and other requirements to which Alexandria Renew Enterprises subscribes relating to the defined health & safety aspects.

5.2 Preparation of the Occupational Health & Safety Policy will be managed by the Safety Coordinator, with input from the Safety Committee.

5.3 Comments, inquiries and suggestions submitted to Alexandria Renew Enterprises by external stakeholders will be considered when preparing and reviewing the Occupational Health & Safety Policy.

5.4 The Occupational Health and Safety Policy will be reviewed by the Safety Coordinator and approved by the Senior Leadership Team. This approval represents Senior Management's endorsement and commitment to promote and adhere to the Occupational Health & Safety Policy.

5.5 Hard copies of the Occupational Health and Safety Policy will be displayed in prominent locations, and maintained in the OHSMS. Electronic copies of the Occupational Health and Safety Policy will be available on Alexandria Renew Enterprise's SharePoint.

5.6 The Occupational Health and Safety Policy will be maintained and revised through the document control procedures detailed in EMSP-4.4.5-1 – Control of Documents procedure. Revision dates will be added to the Occupational Health & Safety Policy.

5.7 The Occupational Health & Safety Policy is communicated to employees, relevant contractors, external interested parties, and the public through provisions established in EMSP-4.4.3-1 – Communications Procedure.

5.8 Training on the Occupational Health & Safety Policy will be conducted during the annual OHSMS Awareness Training and included as part of the new hire employee orientation program.

5.9 The Safety Committee will review the Occupational Health & Safety Policy annually. The review will help ensure the Occupational Health & Safety Policy is current and reflects any changes in activities, products, services, legal and other obligations, and technological options. The review will also help ensure the Occupational Health & Safety Policy continues to promote continual improvement and the prevention of work related injuries and illnesses.

5.10 When a revision to the Occupational Health & Safety Policy is required, it must be approved prior to its release as described in section 5.6 of this procedure.

6.0 REFERENCES / RELATED DOCUMENTS

6.1 EMSP-4.4.5-1 Control of Documents Procedure

6.2 EMSP-4.4.3-1 Communication Procedure

6.3 Meeting minutes, Agendas and Attendance Sign-In Sheets

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ALEXANDRIA RENEW ENTERPRISES
OCCUPATIONAL HEALTH AND SAFETY POLICY STATEMENT

Alexandria Renew Enterprises (AlexRenew) believes that nothing is more important than the health and safety of our employees, contractors, vendors, visitors, customers, and neighbors. We understand that our strength as an organization comes from our employees and our partners and we pledge to provide for each person a safe, healthy, and injury free environment. This policy endorses efforts which ensure the quality of occupational health and safety by emphasizing hazard recognition, incident and accident prevention, and the control of risks in the working environment. We place health and safety above all else. No task is so important and no service so urgent that it cannot be done safely.

We strive to build an interdependent health and safety culture upon the foundation of our key values of integrity and ethics, mutual appreciation and respect, and drive. To this end, we have established a safety committee consisting of members from all levels and departments within the organization, whose responsibility will be identifying hazards and unsafe work practices, removing obstacles to accident prevention, and helping evaluate our efforts to achieve a zero-harm workplace.

AlexRenew is committed to continuing our tradition of community problem solving by collaborating, learning, and listening to our employees, contractors, vendors, visitors, customers, partners, and neighbors. We strive to provide world class professionalism, creativity, adaptability, and initiative when planning to solve problems.

Health and safety is an integral part of our daily business functions and is a responsibility that must be shared equally and without exception by each individual within AlexRenew. Management and supervision are accountable for ensuring employees are empowered to perform work safely, to abate safety hazards, and to report and investigate mishaps and potential hazards in the workplace.

Employees are expected to participate in all phases of our Safety Program and to conduct their daily tasks in a manner consistent with its objectives and standard operating procedures. We encourage any and all suggestions because we are committed to creating a safe workplace for all our employees. We strive for a clear understanding, safe work practices, and involvement in the safety program from every level of AlexRenew.

As technologies, processes, and best management practices evolve, so too must our safety policies and practices. We strive to build a world-class health and safety culture through a process of continual improvement and employee engagement. We hereby pledge to always go above and beyond compliance with established health and safety laws and regulations.

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_____ Karen Pallansch General Manager/Chief Executive Officer	_____ Brian Mosby Deputy General Manager Operations & Maintenance	_____ Liliana Maldonado Deputy General Manager Engineering & Planning
_____ Christine McIntyre Director of Finance	_____ Lisa Van Riper Director, Enterprise Communication	_____ Mike Holdren Director of Information Systems
_____ Blake Hamilton Director of Environmental Performance	_____ Wendy Callahan Human Resources Manager	

January 2020

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.0 Significant Incident and Fatality Prevention Program

Person responsible: Safety Coordinator

Document location: OHSMS SharePoint

Original issue date: 12/2019

Version Number: 0000

Revisions

Rev. No.	Date	Description
0000	12/2019	Original Document

Recurring action items

Activity	Responsibility	Frequency
1. Review and revise the procedure as necessary.	Safety Coordinator	Annually

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OHSMS-2.0 Significant Incident and Fatality Prevention Program

1.0 PURPOSE

1.1 Since the promulgation of the Occupational Safety and Health Act (OSH Act) in 1970, workplace injuries and fatalities have been reduced dramatically nationwide. In recent years, the nationwide total recordable incidence rate (TRIR) has continued its steady downward trend. The rate of workplace fatalities, however, has remained alarmingly stagnant. As part of AlexRenew's ongoing commitment to employee health and safety, this program is intended to provide a framework for the identification of hazards which pose a credible risk of resulting in a Significant Incident or Fatality (SIF) and their management utilizing Fatal Risk Controls (FRCs).

1.2 Critical elements of this program:

1.2.1 The identification of hazards which have an inherently high potential to result in a significant injury or fatality;

1.2.2 The identification of those critical control elements which shall be used to mitigate the risk posed by the aforementioned hazards;

1.2.3 The implementation of a robust root cause analysis investigation procedure into events which might have had SIF potential; and

1.2.4 The training of AlexRenew employees to anticipate, recognize, evaluate, and control hazards with SIF potential.

1.3 Goals of this program:

1.3.1 Identify hidden or unforeseen hazards with SIF potential prior to conducting work;

1.3.2 Establish written procedures for the control of the identified SIF hazards and provide for regular review and updating of those procedures;

1.3.3 Eliminate employee exposure to hazards with SIF potential without the correct FRCs in place;

1.3.4 Train all affected employees in the anticipation, recognition, evaluation and control of hazards with SIF potential;

1.3.5 Establish a clear and rigorous discipline policy for violations of elements of this policy; and

1.3.6 Establish a clear procedure for the reporting and investigation of incidents with SIF potential.

2.0 SCOPE

2.1 This procedure applies to all AlexRenew employees who, through the course of their duties, may be exposed to a hazard which has been determined to have a potential to result in a Significant Incident or Fatality (SIF) as outlined in Section 5.0.

3.0 DEFINITIONS

3.1 Fatality – work related death.

3.2 Fatal Risk Control (FRC) – those controls which are integral to the mitigation of risks which have the potential to cause a significant incident or fatality.

3.3 Significant Incident may refer to any of the following:

3.3.1 Significant Injury: any injury which poses a credible risk to the employee's life or any injury which may result in a permanent degradation to the quality of life of the employee. Examples include (but are not limited to):

3.3.1.1 Amputations (involving bone);

3.3.1.2 Concussions and/or cerebral hemorrhages;

3.3.1.3 Injury or trauma to internal organs;

3.3.1.4 Bone fractures;

3.3.1.5 Complete tendon, ligament, and cartilage tears of the major joints;

3.3.1.6 Herniated disks;

3.3.1.7 Lacerations involving severed tendons or deep wounds which require internal stitches;

3.3.1.8 2nd or 3rd degree burns;

3.3.1.9 Eye injuries resulting in eye loss or loss of vision;

3.3.1.10 Injections of foreign materials;

3.3.1.11 Severe heat exhaustion and all heat stroke cases;

3.3.1.12 Dislocation of a major joint; or

3.3.1.13 Hypothermia and/or frostbite.

3.3.2 Significant Property Damage Incident: any incident that results in property damages in excess of $5,000.

3.4 SIF Potential: An incident shall be found to have had SIF potential if the situation could have been worse and could have resulted in SIF if not for one factor (control in place, location of a person/equipment, time of day, weather, etc).

4.0 RESPONSIBILITY

4.1 The Chief Executive Officer/General Manager provides executive leadership in the development, promulgation, and implementation of the AlexRenew Significant Incident & Fatality Prevention Program.

4.2 Each Director or Deputy General Manager will take an active leadership role by providing strategic direction and resources, promoting a visible engagement at all levels, monitoring the progress of the SIF Prevention Program, and overseeing of any disciplinary action undertaken as part of this program.

4.3 The Safety Coordinator is responsible for the overall implementation, maintenance, oversight, and communication of this program. The Safety Coordinator will conduct, at a minimum, an annual audit of this program or whenever deficiencies in this program are identified. Additional responsibilities shall include:

4.3.1 Overseeing the training and evaluation of all AlexRenew employees;

4.3.2 Maintaining training records for employees trained as part of this program;

4.3.3 Reviewing incident and near miss reports with the Safety Committee to

determine SIF potential;

4.3.4 Assembling and leading investigation teams for any incidents or near misses found to have SIF potential; and

4.3.5 Reviewing hazard reports for SIF potential and recommending courses of action to mitigate risk.

4.4 Supervisors are responsible for the front line oversight and implementation of all of the policies included as a part of this program that apply to the work conducted by the employees in their department. In addition, supervisors are responsible for:

4.4.1 Promptly reporting any situations or tasks that present hazards with SIF potential;

4.4.2 Assisting in the design of controls enacted to reduce employee exposure to SIF hazards;

4.4.3 Assisting in the investigation of incidents and near misses which occur within their department; and

4.4.4 Mentoring employees on safe work procedures and fostering a positive safety culture within their department.

4.5 Employees are responsible for:

4.5.1 Understanding and following the procedures outlined in each of the policies included as a part of this program that apply to their work areas and tasks;

4.5.2 Promptly reporting any hazards observed;

4.5.3 Immediately reporting any incidents or near misses experienced during the course of their work activities; and

4.5.4 Remaining vigilant, assessing the tasks for risks, and implementing the appropriate controls to make the work safe before conducting work.

5.0 SIF HAZARDS

5.1 The following hazards have been identified as having the potential for a Significant

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Incident or Fatality:

5.2 Work at Heights

5.2.1 Any work conducted at a height equal to or greater than four feet above another elevation which is not protected by a guard rail meeting or exceeding the requirements set forth in 29 CFR 1910.29 shall be considered to have SIF potential.

5.2.2 Any fall from a height equal to or greater than four feet above another elevation or from any elevation above dangerous equipment shall be considered to have SIF potential regardless of the presence of a Personal Fall Arrest System.

5.3 Working Around Moving or Rotating Equipment

5.3.1 Work conducted on or around machinery with moving or rotating parts in which an employee's tools and or person (including appendages, hair, clothing, etc.) may be caught shall be considered to have SIF potential if the appropriate machine guards are not present or are missing.

5.4 Bypassing an Equipment Guard or Safety Device

5.4.1 Any work which requires an employee to bypass an equipment guard or safety device in order to conduct maintenance, repairs, or make manual adjustments shall be considered to have SIF potential when the procedures outlined in OHSMS-2.3 *Control of Hazardous Energy* are not adequately implemented.

5.5 Work in Confined Spaces

5.5.1 Any work which requires an AlexRenew employee to enter a permit-required confined space as defined in 29 CFR 1910.146 shall be considered to have SIF potential.

5.6 Work on Electrical System Components

5.6.1 Any work which has the potential for employee exposure to live electrical components shall be considered to have SIF potential.

5.6.2 Any contact made with overhead lines regardless of their purpose or their current status shall be considered to have SIF potential.

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5.6.3 Any contact made with underground utilities during the process of excavation, trenching, or drilling shall be considered to have SIF potential.

5.7 Motor Vehicle Operation

5.7.1 Any motor vehicle incidents including one of the following situations shall be considered to have SIF potential:

5.7.1.1 Any head-on collision;

5.7.1.2 Any collision where the driver or passenger side doors are struck directly;

5.7.1.3 Any collision with speeds in excess of 35 MPH; or

5.7.1.4 Any incident which involves a pedestrian, scooter, biker, or motorcyclist.

5.8 Operating/Working Around Heavy Equipment

5.8.1 Any incident or near miss involving the interaction of a pedestrian and a motor vehicle or piece of heavy equipment (i.e. forklift) shall be considered to have SIF potential.

5.9 Overhead Work

5.9.1 Any work involving a load being suspended via rigging to a crane or other lifting device shall be considered to have SIF potential for any of the following situations:

5.9.1.1 If a load is suspended over a person for any amount of time;

5.9.1.2 If any portion of the load or rigging breaks or falls during the lift; or

5.9.1.3 If the crane is overloaded or begins to tip.

5.10 Emergency Response

5.10.1 Any situation which elicits the activation of the AlexRenew Emergency Response Plan shall be considered to have SIF potential. Such events may include (but are not limited to):

5.10.1.1 Fire/explosion;

5.10.1.2 Natural gas leak;

5.10.1.3 Credible bomb threat;

5.10.1.4 Active shooter; or

5.10.1.5 Spill of hazardous materials.

5.11 Excavation/Trenching

5.11.1 Any work conducted in an unprotected or inadequately protected trench or excavation area which is greater than or equal to four feet in depth shall be considered to have SIF potential.

5.11.2 Any contact made with underground utilities in the process of excavation, trenching, or drilling shall be considered to have SIF potential.

5.12 Large Quantity Chemical Transfer

5.12.1 Transportation and transfer of bulk chemicals shall be considered to have SIF potential if any of the following situations occur:

5.12.1.1 Transfer of a chemical into the wrong tank;

5.12.1.2 Overflow of a tank during chemical transfer;

5.12.1.3 Presence of any ignition source during transfer of methanol;

5.12.1.4 Motor vehicle incident involving a chemical delivery truck; or

5.12.1.5 Any accidental discharge of a chemical delivery to the surrounding area to include spilling, spraying, leaking, etc.

6.0 FATAL RISK CONTROLS

6.1 Any work that exposes the employee, environment, or AlexRenew property to a SIF hazard must have the appropriate Fatal Risk Control in place before work may commence. AlexRenew's Fatal Risk Controls include:

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6.2 Stop Work Authority

6.2.1 All personnel working on AlexRenew property shall have the authority and the responsibility to stop any unsafe activities in accordance with OHSMS-2.1 *Stop Work Authority*.

6.3 Fall Prevention & Arrest Systems

6.3.1 Any employee conducting work 4 feet or more above a lower level must be protected from falling utilizing a guardrail system, safety net system, or personal fall arrest system. The following areas are included:

6.3.1.1 Unprotected sides and edges;

6.3.1.2 Hoist areas;

6.3.1.3 Holes;

6.3.1.4 Dockboards;

6.3.1.5 Runways and similar walkways;

6.3.1.6 Openings;

6.3.1.7 Repair Pits; or

6.3.1.8 Fixed ladders that extend more than 24 feet above a lower level.

6.3.2 Any employee conducting work above a piece of dangerous equipment must be protected from falling into or onto the dangerous equipment using a guard rail or travel restraint system regardless of the potential fall distance unless the equipment is covered or guarded to eliminate the hazard.

6.3.3 All work at heights shall be conducted in accordance with OHSMS-2.2 *Fall Prevention & Arrest*.

6.4 Control of Hazardous Energy (Lockout Tagout)

6.4.1 Prior to conducting any maintenance or servicing on equipment or machinery that may contain or produce hazardous energy that could cause harm, the

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worker shall employ the appropriate Lockout Tagout procedure to control the hazardous energy in accordance with OHSMS-2.3 *Control of Hazardous Energy*.

6.5 Confined Space Entry Permit System

6.5.1 Entry into any confined space (regardless of its designation under the Occupational Safety and Health Administration's regulation) shall require the use of a permit in accordance with OHSMS-2.4 *Confined Space*. This permit shall designate the appropriate risk controls that shall be implemented based on the work area and the task to be completed.

6.6 Machine Guarding

6.6.1 One or more methods of machine guarding shall be employed to protect employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks in accordance with OHSMS-2.5 *Machine Guarding*.

6.7 Energized Electrical Work Permit

6.7.1 Any work conducted on or near electrical work shall be conducted utilizing the procedures outlined in OHSMS-2.3 *Control of Hazardous Energy*. If de-energization is not possible, all work must be conducted by qualified and authorized employees utilizing an Energized Electrical Work Permit in accordance with OHSMS-2.6 *Electrical Safety*.

6.8 Operator Training & Certification

6.8.1 Prior to operating any heavy equipment including but not limited to powered industrial trucks (forklifts), man lifts, excavators, loaders, skid-steers, tractors, etc., employees shall be trained and certified in the proper operation of each piece of equipment in accordance with OHSMS-2.7 *Equipment Operation*.

6.9 Defensive Driver Training

6.9.1 Prior to operating a motor vehicle while on company business (regardless of vehicle ownership), all employees shall undergo a defensive driver training in accordance with OHSMS-2.8 *Motor Vehicle Operation*.

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6.10 Lifting & Rigging

6.10.1 All lifting and rigging conducted on AlexRenew property utilizing a crane or other overhead lifting device shall be conducted only by qualified personnel in accordance with OHSMS-2.9 *Cranes & Rigging*.

6.11 Emergency Response Plan

6.11.1 AlexRenew has prepared an Emergency Response Plan that covers several potential emergency situations including:

6.11.1.1 Spills of hazardous chemicals;

6.11.1.2 Fires;

6.11.1.3 Earthquakes; or

6.11.1.4 Hurricanes.

6.11.2 All affected employees shall be trained to the contents of the plan and annual drills shall be conducted in accordance with OHSMS-2.10 *Emergency Action Plan*.

6.12 Fire Prevention Plan

6.12.1 AlexRenew shall develop and implement a Fire Prevention Plan as OHSMS-2.11.

6.13 Personal Protective Equipment

6.13.1 Personal Protective Equipment is the least preferred method for the control of hazards but shall be utilized as a "last line of defense" to protect employees in the event that implemented engineering and administrative controls fail. The appropriate PPE shall be selected based upon the hazards presented by the task being conducted and the surrounding environment in accordance with OHSM-2.12 Personal Protective Equipment.

7.0 INCIDENT REPORTING & INVESTIGATION

7.1 It is AlexRenew policy that all incidents and near misses, regardless of severity, be

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reported in accordance with OHSM-2.13 Incident & Near Miss Reporting & Investigation. Employees are expected to notify their supervisor or the Safety Coordinator immediately following an incident or near miss.

7.2 AlexRenew shall implement a reporting system that shall allow employees to report all incidents, near misses, and hazards identified without difficulty or fear of retaliation. As part of the reporting procedure, the reporting employee will make a determination as to whether or not the incident or hazard has the potential for a SIF.

7.3 Regardless of the employee's determination, all incident and hazard identification reports shall be reviewed by the Safety Coordinator and the Safety Committee and a determination of SIF potential shall be made by majority consensus. If the committee rules that the incident or hazard identified poses the potential for a SIF, an investigation team shall be assembled to review the incident, identify the root cause of the incident, and recommend a course of action to mitigate the risk in the future.

7.4 All incidents, near misses, and hazards identified shall be classified according to the risk matrix presented in OHSMS-2.13.E *Risk Matrix* which shall take into account the likelihood of the event occurring and the severity of the potential outcome.

7.5 The Safety Coordinator shall regularly perform data analysis on incident and hazard reports to identify incident trends and recommend courses of action accordingly.

8.0 EMPLOYEE TRAINING AND COMMUNICATION

8.1 All AlexRenew employees shall receive, at a minimum, an awareness level training regarding hazards which inherently pose the potential for a SIF as well as their basic FRCs upon initial assignment to the work area.

8.2 Employees who are required to engage with potential SIF hazard tasks or situations shall receive an in-depth training specific to the potential SIF hazard as well as the associated FRCs. Specific training requirements shall be outlined in each of the included programs.

8.3 These trainings shall be conducted prior to the employee's first exposure to the hazard and then once every two years unless otherwise specified by one of AlexRenew's written safety programs.

8.4 Retraining shall be conducted for any employee who is found to be lacking the knowledge or skills required to implement the appropriate FRCs to fully mitigate the risk presented by

a SIF hazard.

9.0 PROGRAM REVIEW

9.1 This program shall be reviewed regularly to identify and correct any deficiencies found. This review shall be conducted immediately upon identification of a program deficiency or at least annually.

10.0 DISCIPLINARY ACTION

10.1 Violation of any of the elements covered in this written plan shall be deemed to be a serious infraction and shall result in immediate disciplinary action up to and including termination of employment in accordance with AlexRenew's Discipline Policy (HR-02, hereby incorporated by reference).

10.2 If the employee found to be in violation of one of these rules was found to have made a good faith effort to abide by AlexRenew's procedures, the employee shall be removed from the task until retraining and verbal counseling can be provided as defined in AlexRenew's Discipline Policy. The employee's supervisor shall make a record of the event and provide a copy of that record to the HR Manager and the Safety Coordinator. One retraining shall be allowed within a two-year period. Subsequent infractions within that time period shall be considered to be a willful violation and shall elicit further disciplinary actions as outlined in Section 10.3.

10.3 Should an employee be found to have knowingly and willingly violated any element covered in this written plan, they shall be issued a Final Written Warning in congruence with AlexRenew's Discipline Policy, and a Performance Improvement Plan shall be developed and implemented by the employee's supervisor. Should a second such event occur within a two year time period, the employee shall be immediately discharged.

11.0 INCLUDED PROGRAMS

11.1 The following programs are considered to be an integral part of this Significant Incident and Fatality (SIF) Awareness and Prevention Program:

11.1.1 OHSMS-2.1 Stop Work Authority

11.1.2 OHSMS-2.2 Fall Prevention & Arrest

11.1.3 OHSMS-2.3 Control of Hazardous Energy (Lockout/Tagout)

11.1.4 OHSMS-2.4 Confined Space

11.1.5 OHSMS-2.5 Machine Guarding

11.1.6 OHSMS-2.6 Electrical Safety

11.1.7 OHSMS-2.7 Equipment Operation

11.1.8 OHSMS-2.8 Motor Vehicle Operation

11.1.9 OHSMS-2.9 Cranes & Rigging

11.1.10 OHSMS-2.10 Emergency Action Plan

11.1.11 OHSMS-2.11 Fire Prevention Plan

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.1 Stop Work Authority Policy

Person responsible: Safety Coordinator

Document location: OHSMS SharePoint

Original issue date: 12/2019

Version Number: 0000

Revisions

Rev. No.	Date	Description
0000	12/2019	Original Document

Recurring action items

Activity	Responsibility	Frequency
1. Review and revise the procedure as necessary.	Safety Coordinator	Annually

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OHSMS-2.1 Stop Work Authority Policy

1.0 PURPOSE

1.1 The purpose of this program is to establish the authority and responsibility for all AlexRenew employees, contractors, vendors, and visitors to halt any work in progress on AlexRenew property if there is a perceived imminent hazard to the health and safety of any individual at any time.

2.0 SCOPE

2.1 This policy applies to all personnel conducting business on AlexRenew property.

3.0 DEFINITIONS

3.1 SWA – Stop Work Authority

4.0 RESPONSIBILITY

4.1 The Chief Executive Officer/General Manager provides executive leadership in the development, promulgation, and implementation of the AlexRenew Stop Work Authority Policy.

4.2 The Safety Coordinator is responsible for the overall implementation, maintenance, oversight, and communication of this policy. The Safety Coordinator will conduct, at a minimum, an annual audit of this policy or whenever deficiencies in this policy are identified. Additional responsibilities shall include:

4.2.1 Ensuring all AlexRenew personnel have received training regarding their rights and responsibilities as a part of this policy;

4.2.2 Communicating the contents of this policy to all contractors, vendors, and visitors to AlexRenew property;

4.2.3 Assisting in the successful resolution of all instances of an exercised SWA; and

4.2.4 Reviewing all SWA reports and identifying and assigning follow-up action items.

4.3 Directors/Deputy General Managers are responsible for:

4.3.1 Establishing the clear expectation for all personnel on AlexRenew property to exercise the SWA;

4.3.2 Creating a culture where the SWA is exercised freely;

4.3.3 Resolving SWA conflicts when they arise;

4.3.4 Assuring that all employees are aware of and are trained in the use of the SWA; and

4.3.5 Assuring that no employee is reprimanded for refusing to perform any unsafe task or for exercising their authority to initiate a stoppage of work.

4.4 Supervisors are responsible for:

4.4.1 Verifying that all members of the work group are trained in SWA and understand the policy;

4.4.2 Supporting any employee who utilizes the SWA and preventing any form of reprimand or intimidation for the use of the SWA;

4.4.3 Creating a culture where the SWA is exercised freely;

4.4.4 Resolving safety issues after a stop work and before operations resume;

4.4.5 Recognizing proactive participation; and

4.4.6 Ensuring that all "stop work" actions are properly reported with required follow-up completed.

4.5 All Employees have the responsibility to fully support the SWA Program and to ask questions if they do not understand any portion of the process outlined below.

5.0 POLICY

5.1 It is our policy that all personnel have the right and responsibility to refuse to perform any task that they feel they do not have the adequate training or preparation to complete successfully or feel is unsafe.

5.2 All personnel conducting business on AlexRenew property are expected to stop any work being performed if they perceive the work or situation to be unsafe, regardless of the party responsible for conducting the work.

5.3 Once a SWA has been initiated, no work will be resumed until all the issues have been addressed.

5.4 Any form of retribution or intimidation directed at any individual for refusing to perform unsafe tasks or for utilizing the SWA is expressly prohibited.

5.4.1 If any employee feels that they have been the target of intimidation or retribution for refusing to perform unsafe tasks or for utilizing the SWA, they shall report the event to the Director or Deputy General Manager responsible for the department or to the HR Manager.

6.0 PROCESS

6.1 In general terms, the SWA process involves a stop, notify, correct and resume approach for the resolution of perceived unsafe work actions or conditions.

6.2 Though situations may differ, the following steps should be the framework for all stop work interventions.

6.2.1 When a person identifies a perceived unsafe condition, act, error, omission, or lack of understanding which presents a perceived imminent hazard to the health and safety of any person, a "stop work" intervention shall be immediately initiated with the person(s) potentially at risk. No matter what actions follow, all work must stop immediately once a stop work intervention has been initiated by any employee, contractor or visitor.

6.2.2 If the supervisor is readily available and the affected person(s) are not in immediate risk, the "stop work action" and resolution should be coordinated through the supervisor. If the supervisor is not readily available or the affected person(s) are in immediate risk, the "stop work" intervention should be initiated directly with those at risk.

6.2.3 Notify all affected personnel and supervision of the stop work issue. Stop associated work activities, remove person(s) from the area, stabilize the situation and make the area as safe as possible.

6.2.4 After work is stopped, all parties shall discuss and gain agreement on the stop

work issue.

6.2.5 If determined and agreed that the task or operation is OK to proceed as is (i.e., the stop work initiator was unaware of certain facts or procedures) the affected persons may re-initiate the work.

6.2.6 If determined and agreed that the stop work issue is valid, the issue shall be resolved to all affected person's satisfaction prior to the commencement of work.

6.2.7 If the stop work issue cannot be resolved immediately, work shall be suspended until proper resolution is achieved. The Director/Deputy General Manager responsible for the work shall make the final determination as needed/appropriate.

6.3 All Stop Work interventions exercised under the authority of this program (whether resolved on the spot or not) shall be documented. The stop work initiator and responsible supervisor shall complete and sign the Stop Work Authority Report found in Appendix A and provided to the Safety Coordinator for review.

7.0 TRAINING

7.1 All AlexRenew personnel shall be trained on the contents of this policy initially upon hiring and then annually thereafter.

8.0 DISCIPLINE

8.1 Disciplinary action may be administered under this policy for either of the following reasons:

8.1.1 If an AlexRenew employee or contractor was found to have witnessed an unsafe act/condition related to a hazard in which they have received training, prior to the incident occurring, they may be subject to disciplinary action as outlined in OHSMS – 2.0 Significant Incident and Fatality Prevention Program.

8.1.2 If an AlexRenew employee or contractor is found to have abused this policy (i.e. having stopped work without having perceived an imminent threat to an individual's health and safety), they may be subject to disciplinary action as prescribed in OHSMS – 2.0 Significant Incident and Fatality Prevention

Program.

8.1.2.1 Note: No employee shall have any form of disciplinary action or retribution brought against them for exercising their stop work authority in good faith even if the perceived risk is found to have been unsubstantiated.

9.0 REFERENCES / RELATED DOCUMENTS

9.1 OHSMS – 2.1.A Stop Work Incident Investigation Report

9.2 OHSMS – 2.0 Significant Incident and Fatality Prevention Program

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.1.A Stop Work Authority Report Form

Section 1: Stop Work Issuance			
Job		Department	
Location of Operation		Date / Time	
Supervisor		Phone	
Individual Initiating Stop Work			
Individual Performing Work			
Work Operation or Condition (include names of individuals performing work)			
Hazard (as stated by individual initiating stop work)			
Additional Observations			

Section 2: Date / Time Informed	
Supervisor	
Safety	

Section 3: Follow-Up Actions

Section 4: Restart Authorization (only one signature required):			
Supervisor		Date / Time	
Safety		Date / Time	
Director		Date / Time	

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 01/2020			

OHSMS-2.13 Incident Reporting & Investigation Program

Person responsible: Safety Coordinator

Document location: OHSMS SharePoint

Original issue date: 01/2020

Version Number: 0000

Revisions

Rev. No.	Date	Description
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Recurring action items

Activity	Responsibility	Frequency
1. Review and revise the procedure as necessary.	Safety Coordinator	Annually

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OHSMS-2.13 Incident Reporting & Investigation Program

1.0 PURPOSE

1.1 This program establishes the means and methods for the timely reporting and systematic investigation of all incidents and near misses, the identification of the associated root cause(s) and the development of corrective actions to prevent reoccurrence.

1.2 The primary purpose of this program is to prevent injuries and illnesses and to save lives through the proactive identification and mitigation of risks identified through a thorough investigation of all near miss incidents which are found to have had the potential to cause a significant injury or fatality as defined in OHSMS-2.0 *Significant Incident and Fatality Prevention Program.*

1.3 This program is also designed to prevent the reoccurrence of incidents which result in injuries and/or other negative consequences through the identification of the underlying root cause(s) of the incident and the development of corrective actions to prevent reoccurrence.

1.3.1 Note: Assignment of blame to individuals is not productive and is not a part of the incident investigation process.

2.0 SCOPE

2.1 This program shall apply to all incidents and near misses which occur on AlexRenew property or involve AlexRenew personnel engaged in work-related activities away from AlexRenew property, regardless of whether the incident resulted in a negative consequence.

2.2 All AlexRenew employees, contractors, vendors, and visitors involved in an incident or near miss during the undertaking of business activities on the behalf of AlexRenew shall be included as a part of this program.

2.3 Any incident which includes real or perceived harm to a member of the public due to the actions of an AlexRenew representative shall be included as a part of this program.

3.0 DEFINITIONS

3.1 Administrative (or work practice) Controls – Procedures that are used to reduce the duration, frequency, or severity of exposure to a hazard. These may include work methods training, job rotation, and gradual introduction to work.

3.2 Engineering Controls – A method of eliminating or reducing the quantity or severity of job risk factors by redesigning the equipment, processes, tools, and workstations.

3.3 Fatality – work related death.

3.4 First Aid – means any of the following:

3.4.1 Using a non-prescription medication at nonprescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is not considered to be first aid);

3.4.2 Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine are not considered first aid);

3.4.3 Cleaning, flushing or soaking wounds on the surface of the skin;

3.4.4 Using wound coverings such as bandages, gauze pads, butterfly bandages, or Steri-Strips™ (other wound closing devices such as sutures, staples, etc. are not considered to be first aid);

3.4.5 Using hot or cold therapy;

3.4.6 Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc.;

3.4.7 Using temporary immobilization devices while transporting an accident victim

3.4.8 Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;

3.4.9 Using eye patches;

3.4.10 Removing foreign bodies from the eye using only irrigation or a cotton swab;

3.4.11 Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means;

3.4.12 Using finger guards;

3.4.13 Using massages; or

3.4.14 Drinking fluids for relief of heat stress.

3.5 Incident – An unplanned sequence of events and/or conditions that results, or could have reasonably resulted, in a loss event.

3.6 Medical Treatment – the management and care of a patient to combat disease, disorder, or injury. Medical Treatment DOES NOT include:

3.6.1 Visits to a physician or other licensed health care professional solely for observation or counseling;

3.6.2 The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes; or

3.6.3 First aid.

3.7 Near Miss – An incident where no property was damaged and no personal injury sustained, but where damage and/or injury easily could have occurred given a slight shift in time or position.

3.8 Negative Consequences – Any undesirable or unexpected outcomes that result in negative effects for an organization.

3.9 OHSMS – Occupational Health & Safety Management System.

3.10 Recordable Incident – Any injury or illness requiring medical treatment beyond first aid.

3.11 Root Cause – The underlying reasons why unsafe conditions exist or why a procedure or safety rule was not followed in a workplace. Root causes generally reflect management, design, planning, organizational or operational failings (e.g., a damaged guard had not been repaired; failure to use the guard was routinely overlooked by supervisors to ensure the speed of production).

3.12 SIF – Significant Incident or Fatality

3.13 SIF Potential – An incident shall be found to have had SIF potential if the situation could have been worse and could have resulted in SIF if not for one factor (control in place,

location of a person/equipment, time of day, weather, etc.).

3.14 Significant Incident may refer to any of the following:

3.14.1 Significant Injury: any injury which poses a credible risk to the employee's life or any injury which may result in a permanent degradation to the quality of life of the employee. Examples include (but are not limited to):

3.14.1.1 Amputations (involving bone);

3.14.1.2 Concussions and/or cerebral hemorrhages;

3.14.1.3 Injury or trauma to internal organs;

3.14.1.4 Bone fractures;

3.14.1.5 Complete tendon, ligament, and cartilage tears of the major joints;

3.14.1.6 Herniated disks;

3.14.1.7 Lacerations involving severed tendons or deep wounds which require internal stitches;

3.14.1.8 2nd or 3rd degree burns;

3.14.1.9 Eye injuries resulting in eye loss or loss of vision;

3.14.1.10 Injections of foreign materials;

3.14.1.11 Severe heat exhaustion and all heat stroke cases;

3.14.1.12 Dislocation of a major joint; or

3.14.1.13 Hypothermia and/or frostbite.

3.14.2 Significant Property Damage Incident: any incident that results in property damages in excess of $5,000.

4.0 RESPONSIBILITY

4.1 The Senior Leadership Team supports the efforts of the Safety Coordinator and the Safety Committee by providing financial and leadership support for the investigation of incidents and near miss events. The Chief Executive Officer supports an effective accident reporting system and responds promptly to all reports and regularly communicates with employees about the program.

4.2 The Safety Coordinator is responsible for the overall implementation, maintenance, oversight, and communication of this program. All evaluations, investigations, training and recommended solutions are coordinated under the direction of the Safety Coordinator in collaboration with the Safety Leadership Team. The Safety Coordinator monitors the results of the program and determines additional areas of focus that are needed. Additional responsibilities shall include:

4.2.1 Ensuring supervisors and members of the safety committee are properly trained to conduct accident investigations;

4.2.2 Ensuring a system is in place for employees to report accidents and near misses;

4.2.3 Ensuring accurate records are maintained and providing documentation upon request;

4.2.4 Following up on all corrective actions identified during the incident investigation process;

4.2.5 Ensuring approved corrective actions are implemented in a timely manner; and

4.2.6 Conducting an annual review of this program.

4.3 The Human Resources Manager will submit the required incident information to Virginia Risk Sharing Association (VRSA), AlexRenew's worker's compensation insurance provider to open a claim. The HR Manager will act as the primary point of contact for all matters related to worker's compensation insurance.

4.4 Supervisors are accountable for the health and safety of all employees within their departments through their active support of the accident investigation program. Supervisors are also responsible for:

4.4.1 Attending incident investigation training to familiarize themselves with the elements of the program;

4.4.2 Ensuring that employees under their supervision have received the appropriate training on incident and near miss reporting;

4.4.3 Creating a culture where employees feel empowered to report incidents and near misses;

4.4.4 Providing the initial response to injuries which occur within their department. This includes:

4.4.4.1 Assuring appropriate first aid has been provided if needed

4.4.4.2 Providing the injured employee with the AlexRenew Workers Compensation Package

4.4.4.3 Assisting the employee in selecting a physician from the panel of physicians

4.4.4.4 Directing the employee to call CompCare at 1-877-234-0898 in a private area

4.4.4.5 Arranging for transportation for the injured employee to the approved medical facility.

4.4.4.6 Notifying the Safety Coordinator and HR Manager of the incident as soon as feasible

4.4.5 Completing the AlexRenew Incident/Near Miss Report Form with assistance from the injured employee and forwarding it to the Safety Coordinator within 24 hours of the incident

4.4.6 Assisting in the incident investigation procedure for incidents which occur within their department; and

4.4.7 Implementing corrective actions identified during incident and near miss investigations in a timely manner.

4.5 Employees are responsible for:

4.5.1 Knowing and understanding the policies and procedures implemented as a part of this program;

4.5.2 Reporting all incidents and near misses as soon as possible to their supervisor or the Safety Coordinator, but no longer than two hours after the time of the incident

4.6 Outside Personnel (contractors) are responsible for:

4.6.1 Reporting all injuries, illnesses, and near misses which had SIF potential which occurred while on AlexRenew property or while engaged in business activities on behalf of AlexRenew to their AlexRenew point of contact as soon as possible but no later than 24 hours after the incident occurs (or first discovery of the work-related incident);

4.6.2 Conducting an investigation of all the aforementioned incidents and providing the investigation findings and corrective actions to their AlexRenew point of contact;

4.6.2.1 Investigation findings and results shall be provided to AlexRenew within 5 business days of the incident

4.7 Failure to report an incident is an intolerable safety violation which shall result in disciplinary action up to and including termination of employment. For contractors/third-parties who fail to report an incident, it will result in their immediate removal from the site and possible cancellation of any contract with their employer for repeated violations by their employees.

5.0 INCIDENT REPORTING PROCEDURE

5.1 Upon experiencing a work-related injury, the following procedures should be taken:

5.1.1 Stop work immediately

5.1.2 If the injury is life-threatening, immediately implement the procedures outlined in the Medical Emergency section of the Emergency Response Plan.

5.1.3 If the injury is not life-threatening, the injured employee should report the incident to their supervisor or the current shift leader who should immediately respond to the incident.

5.1.3.1 If the supervisor or shift leader is unable or unwilling to provide first aid, they must summon another person capable and willing to do so.

5.1.4 Provide first aid as necessary

5.1.5 Supervisor shall secure the scene of the incident or designate another employee to do so to protect evidence and prevent further injuries

5.1.6 Any employees who witnessed the injury shall be separated and isolated until their statement can be collected.

5.1.7 Supervisor shall notify the Safety Coordinator, HR Manager, and the employee's Director/Deputy General Manager as soon as feasible

5.1.8 The Supervisor shall provide the injured employee with the AlexRenew Worker's Compensation Package and assisting them in following the procedures including:

5.1.8.1 Completing the employee statement (Form OHSMS-2.13.A *Employee Report of Incident*)

5.1.8.2 Selecting a physician from the panel of physicians (Form OHSMS-2.13.B *Worker's Compensation Package*)

5.1.8.3 Calling CompCare On-Call in a private location as directed in OHSMS-2.13.B *Worker's Compensation Package*

5.1.9 The Supervisor shall transport the injured employee to the selected medical center for examination and treatment if necessary

5.1.10 The Safety Coordinator shall collect statements from each of the employees that witnessed the incident

5.1.11 The Safety Coordinator shall document the scene, collecting the following information:

5.1.11.1 Pictures and or videos of the scene, including all tools and equipment, walking and working surfaces, entrances and exits, air quality systems, and all other conditions, processes, or items that could possibly have contributed to the accident or injury;

5.1.11.2 Record the details of the accident site, including lighting conditions, other environmental factors, and any unsafe conditions, tools, equipment, or operations;

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5.1.11.3 Document the location of victims, witnesses, machinery, energy sources, and hazardous materials; and

5.1.11.4 Drawn diagrams of the incident.

5.1.12 The Safety Coordinator with the assistance of the Supervisor shall complete OHSMS-2.13.C *Initial Report of Incident* (within 24 hours)

5.1.13 The Safety Coordinator shall notify external parties (OSHA, etc.) if necessary

5.2 Upon experiencing a Near Miss, the following procedures should be followed:

5.2.1 As soon as is practicable, but no later than the end of the shift, the employee that experienced the near miss shall report the incident to their supervisor and complete Form OHSMS-2.13.D *Near Miss Report Form*.

5.2.2 The employee's supervisor shall transmit the AlexRenew Near Miss Report to the Safety Coordinator for review.

6.0 INCIDENT INVESTIGATION PROCEDURE

6.1 The Safety Committee shall review each incident/near miss report and determine if the incident or near miss had SIF potential and assign a risk ranking for the incident using the procedures described in OHSMS-2.13.E *Risk Matrix*. An incident investigation shall be conducted for each of the following incidents:

6.1.1 Any incident which resulted in a fatality, illness, or injury requiring medical treatment beyond first aid; and

6.1.2 Any incident or near miss which was found to have had SIF potential or a risk ranking of high or critical.

6.2 When conducting an incident investigation, the following procedures shall be followed:

6.2.1 An investigation team shall be assembled including, at a minimum, the safety coordinator, the injured employee's supervisor, representatives from the safety committee, and the safety specialists.

6.2.2 The investigation team shall review the incident/near miss report and identify as many immediate causal factors as possible.

6.2.3 The investigation team shall conduct a root cause analysis to determine the underlying causal factors for the incident.

6.2.4 The investigation team shall identify and recommend potential corrective actions to mitigate each root cause.

6.2.5 The safety committee shall assign responsibility and a timeframe for the implementation of the recommended corrective actions.

6.3 The investigation team shall complete OHSMS-2.13.F *Incident Investigation Report* for submittal to the Senior Leadership Team for review.

6.4 Following review by the Senior Leadership Team, approved corrective actions shall be documented utilizing form OHSMS-2.13.G Corrective Action Item Form. The Safety Coordinator shall be responsible for tracking the status of the approved corrective actions and closing open items as they are completed by the responsible persons, appending any supporting documentation to the incident investigation report.

6.5 The Safety Coordinator shall coordinate with the Communications Department to produce an all-staff email notifying employees of the incident and lessons learned.

6.6 Approximately six months following the closure of all corrective actions, the Safety Coordinator with the assistance of the Safety Committee shall assess the effectiveness of the implemented corrective actions and document the assessment utilizing form OHSMS-2.13.G *Corrective Action Assessment Form*.

6.6.1 If the Corrective Action Assessment finds that all Corrective Action Items have been successfully implemented, maintained, and that they are having the intended effect, the incident and all associated Corrective Action Items shall be closed by the Safety Coordinator.

6.6.2 If the Corrective Action Assessment finds that a Corrective Action Item has not been successfully implemented or maintained, or that the corrective action has not had the intended effect, a subsequent Corrective Action Item shall be opened utilizing form OHSMS-2.13.G and the process shall be repeated until all Corrective Action Items have been successfully implemented and closed.

7.0 CONTRACTOR/THIRD-PARTY PERSONNEL

7.1 Any incident experienced by contractor personnel requiring medical treatment beyond first aid while on AlexRenew property or engaged in work tasks on behalf of AlexRenew must be reported immediately (as soon as is possible but no later than 24 hours after the incident) to the contractor's AlexRenew point of contact.

7.2 Any incident or near miss experienced by contractor personnel while on AlexRenew property or while engaged in work tasks on behalf of AlexRenew must be reported immediately to the worker's supervisor. These incidents shall be transmitted to AlexRenew on a weekly basis by the close of business the first business day of the following week.

7.3 Contractor personnel shall conduct an investigation into any incident involving an injury requiring medical treatment beyond first aid as well as any first aid incidents or near misses which had SIF potential as defined in OHSMS-2.0 *Serious Injury and Fatality Prevention Program*. Additional investigations may be required at the discretion of the Safety Coordinator.

7.3.1 Investigations conducted by contractor personnel shall be completed using the contractor's internal policy and procedures. An investigation report shall be compiled and furnished to AlexRenew within one business week. The report must contain, at a minimum, the following information:

7.3.1.1 A narrative of the incident including pictures and/or diagrams as necessary;

7.3.1.2 Identification of the root cause of the incident;

7.3.1.3 Corrective actions identified to prevent re-occurrence of the incident; and

7.3.1.4 The timeline to implement the recommended corrective actions.

7.4 Failure to report any incidents or injuries experienced while on AlexRenew property or while engaged in work tasks on behalf of AlexRenew shall be considered to be a serious safety violation and shall result in the immediate removal of the worker found to be in violation of this policy.

7.5 Repeated failures to report incidents may result in the cancellation of any contract with the employer for repeated violations by their employees.

8.0 RECORDKEEPING

8.1 Any fatality, illness, or injury requiring medical treatment as defined in paragraph 3.6 shall

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be recorded on the OSHA Form 300 – Log of Work-Related Injuries and Illnesses and summarized on the OSHA Form 300A – Summary of Work-Related Injuries and Illnesses.

8.1.1 A completed and signed copy of the OSHA Form 300A shall be displayed prominently in a conspicuous place where notices to employees are customarily posted.

8.1.1.1 This summary must be posted from February 1st through April 30th of the following year.

8.1.2 Completed and signed copies of the OSHA 300 and 300A forms shall be maintained digitally for a period of at least 5 years following the end of the calendar year that these records cover.

8.2 Every incident and near miss shall be documented using the AlexRenew Incident/Near Miss Report Form which is equivalent to the OSHA Form 301 – Injuries and Illnesses Incident Report.

8.2.1 Completed and signed copies of the AlexRenew Incident/Near Miss Report Form shall be maintained digitally for a period of at least 5 years following the end of the calendar year that these records cover.

8.3 Each incident investigation required under Section 6.0 of this program shall be completed using the AlexRenew Incident Investigation Form.

8.3.1 Completed and signed copies of the AlexRenew Incident Investigation Form as well as any supporting documentation shall be maintained digitally with the corresponding AlexRenew Incident/Near Miss Report Form.

9.0 REGULATORY REPORTING

9.1 Any fatality which occurs at AlexRenew property shall be reported to OSHA by the Safety Coordinator within 8 hours.

9.2 Any of the following shall be reported to OSHA by the Safety Coordinator within 24 hours:

9.2.1 The in-patient hospitalization of one or more employees;

9.2.2 An amputation; or

9.2.3 A loss of an eye.

9.3 Any of the incidents listed in paragraph 9.1 and 9.2 shall be reported to OSHA by the Safety Coordinator utilizing one of the following methods:

9.3.1 Online at https://osha.gov/report.html

9.3.2 By phone at 1-800-321-6742

9.3.3 In person at 9400 Innovation Drive, Suite 120, Manassas, VA 20110.

9.4 When reporting the incident, the following information must be provided:

9.4.1 The establishment name (Alexandria Renew Enterprises);

9.4.2 The location of the work-related incident;

9.4.2.1 1800 Limerick St, Alexandria, VA 22314 for incidents which occur at the Environmental Center

9.4.2.2 1500 Eisenhower Ave, Alexandria, VA 22314 for incidents which occur at the plant

9.4.3 The time of the work-related incident;

9.4.4 The type of reportable event (i.e. fatality, in-patient hospitalization, amputation, or loss of an eye);

9.4.5 The number of employees who suffered a fatality, in-patient hospitalization, amputation, or loss of an eye;

9.4.6 The names of employees who suffered a fatality, in-patient hospitalization, amputation, or loss of an eye;

9.4.7 The AlexRenew contact person and his or her phone number; and

9.4.8 A brief description of the work-related incident.

9.5 OSHA Form 300A Summary of Work-Related Injuries and Illnesses shall be submitted each year electronically by the Safety Coordinator utilizing OSHA's Injury Tracking

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Application located at https://www.osha.gov/injuryreporting/

9.5.1 This submission shall be made no later than January 31st of the following year (i.e. January 31st 2020 for the OSHA 300A form from 2019).

10.0 TRAINING

10.1 All AlexRenew employees shall receive annual instruction in the following:

10.1.1 The identification of incidents and near misses;

10.1.2 How to appropriately respond to incidents and near misses; and

10.1.3 How, when and to whom to report an incident.

10.2 In addition to the training prescribed above, all AlexRenew Supervisors, Safety Specialists, and members of the Safety Committee shall receive annual instruction in the proper methods for conducting an incident investigation including root cause analysis.

10.3 In addition to all of the previously prescribed training, all AlexRenew Supervisors shall receive training in the management of cases involving worker's compensation.

11.0 PROGRAM REVIEW

11.1 This program shall be reviewed regularly to identify and correct any deficiencies found. This review shall be conducted immediately upon identification of a program deficiency or at least annually.

12.0 DISCIPLINARY ACTION

12.1 As stated previously, the purpose of incident investigations is to determine the underlying cause for the incident and make corrections to prevent similar incidents from occurring. As such, the assignment of blame to an individual is unproductive, and shall not be considered as a part of this program.

12.2 Any form of retaliation or retribution conducted in response to the reporting of an incident is hereby expressly forbidden. Retaliation may include things such as: verbal abuse, assigning the employee to only the most undesirable tasks, docking the employee hours or vacation time, etc.

12.2.1 If an employee believes they have been the target of retaliation for reporting an incident or near miss, they must immediately report the incident to the Safety Coordinator or HR Manager who shall jointly open an investigation into the matter.

12.3 If, during the course of an investigation into an incident which resulted in an injury or illness requiring medical attention beyond first aid, it is discovered that an employee was in violation of one of AlexRenew's written safety programs, disciplinary action may be taken as prescribed by the program the employee was found to be in violation of.

12.4 Any employee who voluntarily reports an incident or near miss experienced while engaged in their work duties shall be protected from any form of retaliation or disciplinary action that may be recommended by any of AlexRenew's written safety programs that the employee may be found to have been in violation of with the exception of retraining in the policy or procedure.

12.4.1 Any retraining conducted in response to a voluntarily reported incident or near miss shall not be included in any progressive discipline plans for any past or future violations.

12.5 Failure to report any incident or injury shall be considered to be a willful violation of AlexRenew's health and safety policies and shall be subject to disciplinary action as prescribed in OHSMS-2.0 *Significant Incident and Fatality Prevention Program* paragraph 10.3.

13.0 REFERENCES / RELATED DOCUMENTS

13.1 OHSMS-2.13.A Employee Report of Incident

13.2 OHSMS-2.13.B Worker's Compensation Package

13.3 OHSMS-2.13.C Initial Report of Incident

13.4 OHSMS-2.13.D Near Miss Report Form

13.5 OHSMS-2.13.E Risk Matrix

13.6 OSHA Form 300 Log of Work-Related Injuries and illnesses

13.7 OSHA Form 300A Summary of Work-Related Injuries and Illnesses

13.8 OSHA Form 301 Injuries and Illnesses Incident Report

13.9 OHSMS-2.0 Significant Incident and Fatality Prevention Program

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3 Control of Hazardous Energy Program (Lockout/Tagout)

Person responsible: Safety Coordinator

Document location: OHSMS SharePoint

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Revisions

Rev. No.	Date	Description
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Recurring action items

Activity	Responsibility	Frequency
1. Review and revise the procedure as necessary.	Safety Coordinator	Annually
2. Perform annual evaluations of authorized employees	Supervisors	Annually
3. Review of completed work requests for	Safety Coordinator	Annually
4. Safety Training for authorized & affected employees	Safety Coordinator	Biennially

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OHSMS-2.3 Control of Hazardous Energy Program (Lockout/Tagout)

1.0 PURPOSE

1.1 This program establishes the minimum requirements for the lockout/tagout (LOTO) of energy isolating devices whenever maintenance or servicing is done on machines or equipment on AlexRenew property. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, locked out, and verified before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause serious injury. Procedures have been developed, implemented, and documented in accordance with 29 CFR 1910.147, Control of Hazardous Energy and 29 CFR 1910.333, Selection and Use of Work Practices as promulgated by the Occupational Safety and Health Administration (OSHA). This program serves to:

1.1.1 Establish a safe and positive means of shutting down machinery, equipment and systems.

1.1.2 Prohibit unauthorized personnel or remote control systems from starting machinery or equipment while it is being serviced.

1.1.3 Provide a secondary control system (tagout) when it is impossible to positively lockout the machinery or equipment.

1.1.4 Establish responsibility for implementing and controlling lockout/tagout procedures.

1.1.5 Ensure that only approved locks, standardized tags and fastening devices provided by AlexRenew will be utilized in the lockout/tagout procedures.

1.1.6 Establish the training requirements for employees who are engaged in work requiring the locking and tagging out of equipment or who are affected by such work.

1.1.7 Establish procedures for regular review of the program, the employees authorized by this program, and the equipment that falls under this program.

2.0 SCOPE

2.1 This program applies to all employees or contractor/third party personnel who are required to perform servicing, commissioning, maintenance, installation or decommissioning on

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equipment or machinery that may contain or produce hazardous energy that could cause them harm. This LOTO program applies to all other employees or outside personnel who may be working around or possibly be exposed to these hazardous energy sources. All contractors who are hired to perform servicing or maintenance on the premises of AlexRenew must follow the procedures contained herein at a minimum. This program is not intended to include the requirements of NFPA 70E for working on or near live parts of electrical equipment. Procedures for working on or near live parts of electrical equipment can be found in AlexRenew's Electrical/Arc Flash Safety Program.

2.2 Servicing or maintenance on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or startup of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance may be performed without the use of LOTO.

3.0 DEFINITIONS

3.1 Affected Employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

3.2 Authorized Employee - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

3.3 Authorized LOTO Trainer – Authorized LOTO Trainer may refer to any employee who has training and extensive experience in the proper use and application of the Lockout Tagout Procedure. Prior to being authorized as a trainer by AlexRenew, the employee must undergo an evaluation and be approved by the safety coordinator and all supervisors who oversee authorized employees. Supervisors overseeing authorized employees are automatically considered to be Authorized LOTO Trainers.

3.4 Electrical testing - The use of instruments to verify that electrical energy sources are isolated. Voltage meters and non-contact voltage detectors, that alarm in the proximity of low and medium voltage applications are acceptable based on the skills and training of the Electrician/Qualified Person. Non-contact voltage detectors cannot be utilized on voltages

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less 600 volts for purposes of LOTO.

3.5 Electrician/Qualified Person - A person who is competent, by their electrical knowledge and skills, to safely work on energized circuits. This includes the proper use of precautionary techniques, personal protective equipment, insulating materials and insulated tools.

3.6 Energized – Connected to an energy source or containing residual or stored energy.

3.7 Energy Isolating Device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; and/or a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors. In addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

3.8 Energy Source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

3.9 Job Lock - A device used to ensure the continuity of energy isolation during a multiple-shift operation, or a group lock. A group lock is placed on the equipment at each energy isolating device. The key(s) for the job lock are then placed in a lockbox. Authorized employees will then place their personal locks on the lockbox.

3.10 Lockout - The placement of a lockout device on an energy isolating device, in accordance with an established procedure. This ensures that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

3.11 Lockout Device - A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

3.12 LOTO - Lockout Tagout.

3.13 Normal Production Operations - The utilization of a machine or equipment to perform its intended production function.

3.14 OSHA – Occupational Safety and Health Administration.

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3.15 PPE – Personal Protective Equipment.

3.16 Servicing and/or Maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

3.17 Setting Up - Any work performed to prepare a machine or equipment to perform its normal production operation

3.18 "Shall" or "Must" – means mandatory for the purposes of this Program.

3.19 "Should" or "May" – means recommended for the purposes of this Program.

3.20 Supervisor – May refer to any of the following: Plant Superintendent of Operations and Maintenance, Construction Programs Coordinator, Electrical Supervisor, Mechanical Supervisor, or Shift Leaders.

3.21 Tagout - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

3.22 Tagout Device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

4.0 RESPONSIBILITY

4.1 The Chief Executive Officer/General Manager maintains overall responsibility for the administration of the Control of Hazardous Energy Program.

4.2 The Safety Coordinator is responsible for the overall implementation, maintenance, oversight, and communication of this program. The Safety Coordinator will conduct, at a minimum, an annual audit of this program or whenever deficiencies in this program are identified. Additional responsibilities shall include:

4.2.1 Overseeing the training and evaluation of all affected and authorized employees;

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4.2.2 Maintaining training records for employees trained as part of this program;

4.2.3 Conducting periodic inspections of equipment covered under this program in conjunction with supervisors;

4.2.4 Maintaining an inventory of all lockout tagout devices;

4.2.5 Assisting in the creation/update of equipment energy control procedures any time new equipment is installed or some change is made to current equipment that would affect the lockout tagout procedure for that equipment; and

4.2.6 Conducting periodic review of completed work orders to determine compliance with the LOTO Verification Checklist requirement of this program.

4.3 Supervisors are responsible for:

4.3.1 Implementing the Control of Hazardous Energy and LOTO procedure;

4.3.2 Conducting periodic inspections/evaluations as described in the Program Review section in conjunction with the Safety Coordinator;

4.3.3 Reviewing scope of work for activities which require LOTO;

4.3.4 Ensuring that LOTO will not interrupt the continuity of operations of the plant;

4.3.5 Assigning an authorized employee to conduct the work under the procedures prescribed in this plan;

4.3.6 Conducting a system walk down with the authorized employee for particularly hazardous or complicated systems;

4.3.7 Assisting in the creation/update of equipment energy control procedures any time new equipment is installed or some change is made to current equipment that would affect the lockout tagout procedure for that equipment;

4.3.8 Assigning a competent authorized employee to mentor and monitor employees new to the program;

4.3.9 Following the proper procedure when completing the Approval to Cut/Remove

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LOTO Devices from the Program; and

4.3.10 Ensuring LOTO conducted by contractor/third-party personnel is completed in compliance with the procedures described in the Contractor/Third-Party Section of this program.

4.4 Authorized Employees are responsible for:

4.4.1 Knowing and understanding the policies and procedures implemented as a part of this program;

4.4.2 Using a questioning attitude when developing a plan to control the hazardous energy of a piece of equipment in need of maintenance;

4.4.3 Notifying affected employees prior to the lockout of any equipment and coordinating to ensure continuity of operations is maintained;

4.4.4 Implementing the LOTO process as described in this program;

4.4.5 Verifying that all sources of hazardous energy have been properly isolated from the equipment prior to commencing work (this could include attempting to start the equipment manually, contacting the control room to have them attempt to start the equipment remotely, ensuring drains/vents are open and pressure is bled off, and/or using a testing device to ensure electrical lines have been de-energized);

4.4.6 Visually verifying that personnel are not exposed to equipment and that all tools and materials have been removed from equipment before removing locks and re-energizing the equipment;

4.4.7 Walking down the completed equipment with the affected employees to ensure the equipment is operational and ready to return to service;

4.4.8 Submitting the completed LOTO Verification Checklist following the completion of work through AVANTIS;

4.4.9 Never adjusting, removing, or modifying the locking devices or tags of another authorized employee;

4.4.10 Never working on a system that they have not personally applied their locks and

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tags to and verified is in a zero energy state; and

4.4.11 Stopping work and notifying their supervisor if they have any concerns with the LOTO procedure or potentially energized equipment.

4.5 Affected Employees are responsible for:

4.5.1 Understanding the purpose of these procedures and that attempting to restart machines or equipment under LOTO is prohibited;

4.5.2 Never adjusting, removing, or modifying the locking devices or tags of authorized employees;

4.5.3 Never working on a system that has been locked and tagged out by another employee;

4.5.4 Stopping work and notifying their supervisor if they have any concerns with the LOTO procedure; and

4.5.5 Maintaining a list of all equipment currently locked out (Appendix F) and communicating that list to the next shift during the shift debrief.

4.6 Outside Personnel (contractors) are responsible for:

4.6.1 Ensuring all employees expected to conduct work under LOTO procedures have received the appropriate training;

4.6.2 Supplying locks and tags compliant with 29 CFR 1910.147 to all employees expected to conduct work under LOTO procedures;

4.6.3 Ensuring all personnel's tags have company contact information as well as the information required by 29 CFR 1910.147;

4.6.4 Following all of AlexRenew's policies and procedures;

4.6.5 Submitting a process shutdown or equipment removal from service notice as directed by the AlexRenew point of contact prior to conducting any work applicable to this Program;

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4.6.6 Conducting a system walk down with their AlexRenew supervisor or designated person for work on any system requiring lockout tagout on AlexRenew property. AlexRenew's authorized employee and contractor personnel will all apply locks and tags appropriate for the work to be conducted and verify the isolation of all sources of hazardous energy prior to the contractor beginning work; and

4.6.7 Stopping work and notifying their AlexRenew supervisor/lead person if they have any concerns with the LOTO procedure.

4.7 Failure to comply with LOTO procedures is an intolerable safety violation which shall result in disciplinary action up to and including termination of employment. For contractors/third-parties who violate LOTO procedures, it will result in their immediate removal from the site and possible cancellation of any contract with their employer for repeated violations by their employees.

5.0 EQUIPMENT INVENTORY AND HAZARD ASSESSMENT

5.1 With the exception of equipment listed in Appendix A (which have equipment specific LOTO procedures), AlexRenew is not required to document the equipment specific procedure for each particular machine or equipment because these machines and/or equipment meet all the following requirements:

5.1.1 No potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;

5.1.2 The machine or equipment has a single energy source that can be readily identified and isolated;

5.1.3 The isolation and locking out of the energy source will completely de-energize and deactivate the machine or equipment;

5.1.4 The machine or equipment is isolated from the energy source and locked out during servicing or maintenance;

5.1.5 A single lockout device will achieve a locked-out condition;

5.1.6 The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;

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5.1.7 The service or maintenance does not create hazards for other employees; and

5.1.8 AlexRenew in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

5.2 Prior to placing any newly installed, majorly modified, or translocated equipment into service, a new assessment of the equipment shall be conducted to determine whether or not an equipment specific lockout tagout procedure is necessary. The results of this assessment shall be maintained on file for review.

6.0 LOCKOUT TAGOUT DEVICES

6.1 Locks

6.1.1 Authorized Employee Locks – Red Locks

6.1.1.1 Authorized Employees will be assigned a set of six locks each keyed the same with one unique key. A master key will not be available. Labels will be affixed to each lock indicating who the lock belongs to. Locks will not be removed by anyone other than the authorized employee who placed it on the energy isolation device unless the procedure described in the "Removal of LOTO Devices" section of this program are followed. Employees working on the same machine will each use their own lock to lockout the equipment. Authorized Employee locks are identified in Figure 1 below.

6.1.2 Job Locks – Yellow Locks

6.1.2.1 Job locks shall be grouped into sets of fifteen locks each keyed the same with one unique key. A master key will not be available. Job locks shall be maintained at a central location within the plant. Only the Safety Coordinator and Supervisors shall have access to the job locks. In the event the use of job locks becomes necessary, the job locks shall be signed out by the lead authorized employee who will assume responsibility for ensuring the job locks are returned to the storage location after the work has been completed. Job locks shall be used under the following circumstances:

6.1.2.1.1 Large groups of employees will all be working on the same equipment;

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6.1.2.1.2 The equipment requires more than six locks to isolate; and

6.1.2.1.3 The equipment shutdown is anticipated to last more than a single shift.

6.1.2.2 If one of these circumstances arises, the lead authorized employee will apply the yellow job locks to the equipment to be isolated following the procedure outlined below. After complete isolation has been achieved, and all employees involved have verified isolation, the lead authorized employee will place the key for the job locks into a group lock box. All involved employees will then place their personal red locks on the lock box.

6.1.2.3 If the equipment shutdown is anticipated to last more than a single shift, the supervisor will leave his/her lock on the box and notify affected personnel as to the anticipated duration of the equipment lockout. If another supervisor will be assuming responsibility for the equipment that has been locked out, the oncoming supervisor will lock onto the equipment and the outgoing supervisor will remove their lock during the shift debrief. Job locks are identified in Figure 1 below.

6.1.3 Abandoned or Obsolete Equipment Locks – Blue Locks

6.1.3.1 When equipment is no longer used with the current processes, it will be placed in caretaker status. Caretaker status means that the equipment will be removed from the normal LOTO process.

6.1.3.2 Any specific equipment deemed by the Deputy General Manager of Operations & Maintenance to not add value to a LOTO process can be placed in caretaker status. When a piece of equipment is placed into caretaker status:

6.1.3.2.1 The equipment will be tested, drained, disconnected, vented, and verified to be at a zero energy state;

6.1.3.2.2 A blue lock will be placed on all Energy Isolation Devices to ensure the equipment cannot be inadvertently re-energized;

6.1.3.2.3 A list of equipment in caretaker status will be maintained by the Safety Coordinator; and

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6.1.3.2.4 The Safety Coordinator will maintain the keys to equipment in caretaker status in a secure manner.

6.1.3.3 Abandoned/Obsolete equipment locks are identified in Figure 1 below.

6.1.4 Contractor Locks

6.1.4.1 Contractors shall be allowed to utilize the locks specified by their internal procedures as long as they meet or exceed the specifications outlined in 29 CFR 1910.147. Contractor locks, however, shall be supplemented by an additional tag that identifies the company the contractor is employed by and a telephone number at which the contractor company can be reached at all times while the contractor is engaged in work requiring LOTO on AlexRenew property.

6.1.5 Figure 1 – Approved Lockout Devices

Authorized Employee Lock

Job Lock

Abandoned/Obsolete Equipment Lock

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6.2 Tags

6.2.1 Each lockout device shall be supplemented by a tag which is capable of withstanding the environment to which they are exposed without deteriorating or the message on the tag becoming illegible.

6.2.2 Each tag must readily identify the employee to whom the tag belongs with the employee's printed name, department, and the words "DANGER", and "DO NOT OPERATE" OR "DO NOT USE" printed on the tag.

6.2.3 Tags for group locks should be identical in design to the personnel tags but be

labelled with the group lock number assigned to the set by the Safety Coordinator.

6.2.4 In the event that a piece of equipment is not capable of being locked out, a tag alone shall not be used as a means of control of hazardous energy. A tag without a lock must be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device. Equipment incapable of being locked out should be evaluated by leadership to determine if modifications can be made to the equipment to allow for lockout devices or some other additional means of control. Authorized Employee and Job Tags are identified in Figure 2 below.

6.2.5 Tags shall also be utilized for abandoned/obsolete equipment. These tags must be visually dissimilar to the tags used for group & personal lockout tagout. The tags shall be similarly durable and labelled with equipment identifying information and any deficiencies the equipment might possess. Abandoned/Obsolete equipment tags are identified in Figure 2 below.

6.2.6 Figure 2 – Approved Tagout Devices

Authorized Employee LOTO Tag

Obsolete/Abandoned Equipment Tag

6.3 Other Lockout Devices

6.3.1 Other lockout devices utilized to isolate equipment may include: chains, valve covers, wedges, key blocks, adapter pins, self-locking fasteners, lockboxes, hasps, circuit breaker lockouts, etc. Each of these devices must be able to withstand the environment in which they will be used and must be substantial enough to prevent

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removal without the use of excessive force or unusual techniques such as using bolt cutters or other metal cutting tools.

7.0 ENERGY CONTROL PROCEDURES

7.1 No AlexRenew employee shall be permitted to commence with LOTO procedures without first being properly trained (see the section below on Employee Training and Communication).

7.2 Equipment Isolation/Lockout Tagout

7.2.1 All work requiring isolation of hazardous energy shall follow these steps:

7.2.1.1 **Identification of Need**. The person that identifies the need for equipment repair or maintenance shall shut down the equipment and submit a Work Request using AVANTIS.

7.2.1.2 **Supervisor Review.** A supervisor will review the Work Request and issue a Work Order to an authorized employee.

7.2.1.2.1 For equipment which has been assigned an equipment specific procedure, the supervisor will print the procedure and review it with the authorized employee prior to allowing work to commence.

7.2.1.3 **Prepare for LOTO.** The authorized employee shall refer to the equipment-specific LOTO procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.

7.2.1.3.1 For equipment requiring the use of job locks, the lead authorized employee will sign out the job locks which are held by one of the Supervisors. The Group LOTO Device Checkout Sheet is included as Appendix G.

7.2.1.4 **Notify Affected Employees.** Notify all affected employees including operations by calling the control room that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

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7.2.1.4.1 If necessary, the authorized and affected employees will walk down the system together to ensure that continuity of operations is maintained during the work.

7.2.1.5 Shutdown. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

7.2.1.6 Isolate the energy. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

7.2.1.6.1 When auxiliary equipment or machine controls are powered by separate supply sources, such equipment or controls shall also be locked or tagged to prevent any hazard that may be caused by operating the equipment or exposure to live circuits.

7.2.1.6.2 When equipment uses pneumatic or hydraulic power, pressure in lines or accumulators shall be checked. Using whatever safe means possible, this pressure shall be relieved or pressure lines disconnected.

7.2.1.6.3 When stored energy is a factor as a result of position, spring tension or counter-weighting, the equipment shall be placed in the bottom position, or it shall be blocked to prevent movement or closure.

7.2.1.7 Apply the LOTO devices. Lock out the energy isolating device(s) with assigned individual lock(s) and tag(s). If a device cannot be locked using a padlock or built in lock mechanism, the authorized employee must securely fasten a tagout device as close as safely possible to the energy-isolating device in a position where it will be immediately obvious to anyone attempting to operate the device utilizing a durable attachment such as a plastic zip tie.

7.2.1.8 Control stored energy. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc. When stored energy is a factor as a result of position, spring tension or counterweighting, the equipment shall be placed in the bottom position, or it shall be blocked to prevent movement or closure.

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7.2.1.9 **Verify LOTO.** Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the machine or equipment has been turned off or shutdown properly as required by the equipment specific energy isolation procedures; all the energy isolating devices were identified, located and operated as required; the LOTO devices have been attached to the energy isolating devices as required; and the stored energy has been rendered safe as required.

7.2.1.9.1 If the work shall expose an employee to contact with parts of fixed electric equipment or circuits, a qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 nominal volts, the test equipment shall be checked for proper operation immediately after this test.

7.2.1.9.2 Note: As part of the verification of LOTO, the authorized employee must contact the control room who shall attempt to restart the equipment remotely and notify the authorized employee regarding their ability to do so.

7.2.1.10 Complete the LOTO Verification Checklist (Appendix B). This checklist must be submitted as part of closing the Work Order in AVANTIS.

7.2.1.10.1 Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

7.3 Restoring Equipment to Service

7.3.1 **Inspection.** Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

7.3.2 **Check for Employee Safety.** Check the work area to ensure that all employees have been safely removed from the area.

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7.3.3 Ensure Controls are in Neutral. Verify that the controls are in neutral.

7.3.4 Remove LOTO Devices. Remove the lockout devices and reenergize the machine or equipment. Each LOTO device must be removed by the employee who applied the device. The removal of some forms of blocking may require energization of the machine before safe removal.

7.3.5 Notify Affected Employees. A walk down should be conducted with the affected employees to ensure that the equipment repairs were successful and can be safely returned to service.

7.4 Machine or Equipment Testing or Repositioning

7.4.1 In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:

7.4.1.1 Clear the machine or equipment of tools and material;

7.4.1.2 Remove the LOTO devices by the authorized employee who applied it;

7.4.1.3 Energize the machine and employ effective employee protection while testing or positioning machinery; and

7.4.1.4 Turn off all systems, isolate the machine from the energy source, and reapply LOTO devices as specified, if additional servicing or maintenance is required.

8.0 REMOVAL OF LOTO DEVICES

8.1 It cannot be over-emphasized that employees who work on de-energized machinery or equipment may be seriously injured or killed if LOTO devices are removed and the machinery or equipment is re-energized without their authorization. Lockout or tagout is personal protection. For this reason, it is extremely important that all employees respect lockout and tagout devices and that the personal LOTO devices be removed only by the person(s) who applied them.

8.2 Authorization to Cut/Remove.

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8.2.1 In the rare situation in which the employee who placed the personal LOTO device is not available to remove that LOTO device, the device may be removed utilizing the following procedures. Prior to removal of the device, the Approval to Cut/Remove LOTO Device(s) form (Appendix C) must be completed to verify that the authorized employee (who applied the device) is not at the facility. The Safety Coordinator or designated Supervisor must give final authorization before the removal of another employee's lock. The person authorizing the removal shall be responsible for ensuring the following steps have been followed:

8.2.1.1 Verify that the authorized employee (who applied the device) is not at the facility by:

8.2.1.1.1 Making all reasonable efforts to contact the employee to receive verbal verification from them that they are not on AlexRenew property. Inform the employee that their LOTO device(s) have been removed;

8.2.1.1.2 Physically walk down the equipment to ensure all tools and materials are removed from the area and that no employees are in harm's way; and

8.2.1.1.3 Complete the Approval to Cut/Remove LOTO Device form (Appendix C).

8.2.1.2 Ensure that this employee knows of the removal of the device(s) before they resume work at the facility.

8.2.2 NOTE: Removal of a personal LOTO device by another person may not be based on convenience and may not be done simply because the employee is not available at the LOTO location, but is still at the workplace. The steps above are necessary to ensure that the employee who is protected by the device is not exposed to energy hazards either at the time of its removal or after its removal.

8.3 Removal of a personal LOTO device by another person without following the procedures described above shall constitute a serious violation of health and safety rules and the employee who removed the lock shall be subject to disciplinary actions up to and including termination of employment.

8.4 Completed Approval to Cut/Remove LOTO Device forms must be forwarded to the Safety Coordinator for appropriate storage/filing and shall be maintained for a period not less than

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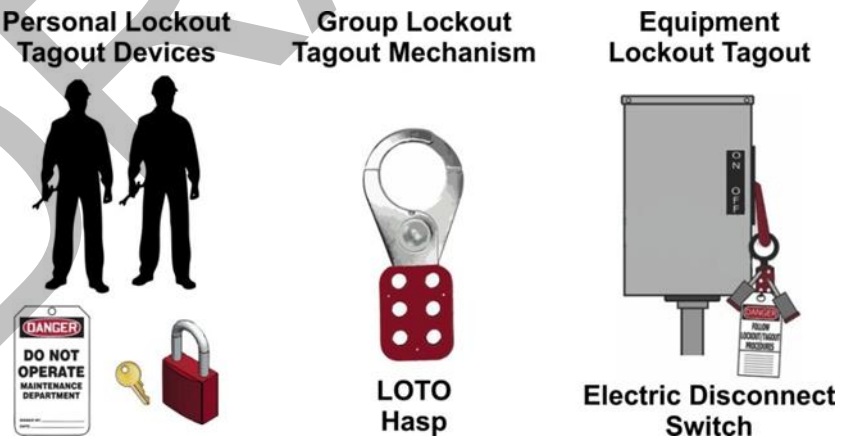
3 years.

8.5 If the employee forgets to remove their LOTO device prior to the end of the shift, the cost of replacement devices will be deducted from their next paycheck. If the task has been scheduled to last longer than a single shift, or the authorized employee was directed to leave LOTO devices in places by a supervisor and changing conditions necessitated the removal of the lock, the employee will not be deducted the cost of replacement devices. An inventory of all locks that have been assigned to AlexRenew personnel will be maintained with their associated key numbers in the event replacement keys or locks need to be ordered from the manufacturer.

9.0 GROUP LOCKOUT/TAGOUT

9.1 Basic Group LOTO – Small Group. Each authorized employee places their personal LOTO device on each energy isolating device using a group LOTO mechanism and removes it upon completion of the assignment. Each authorized employee verifies or observes the de-energization of the equipment. The lead authorized employee completes the LOTO Verification Checklist.

9.2 Figure 3 – Small Group LOTO Procedure



9.3 Master Lockbox – Large Group. Under a lockbox procedure, a job lock is placed on each energy isolation device after de-energization by the servicing/maintenance group lead authorized employee. The key(s) are then placed into a lock-box. Each authorized employee assigned to the job then affixes his/her personal lock and tag to the lockbox. As a member of a group, each assigned authorized employee verifies that all hazardous energy

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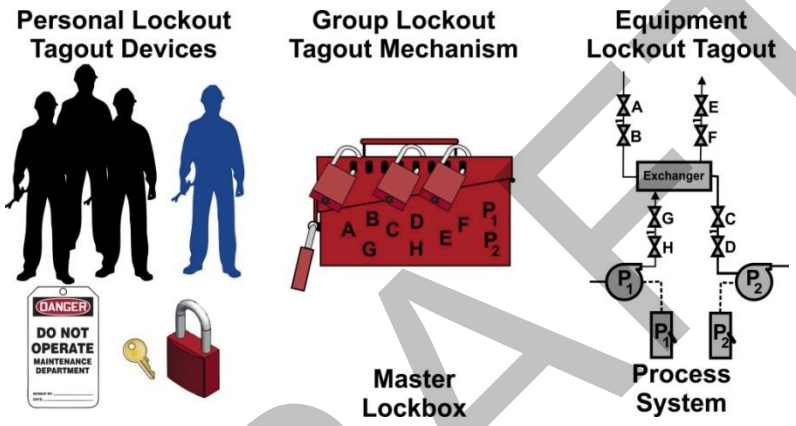
has been rendered safe. The LOTO devices cannot be removed or the energy isolating device turned on until each individual employee removes their personal lock and tag from the lockbox. Then each appropriate key is used to remove each LOTO device, and the machinery/equipment can be re-energized.

9.4 Figure 4 – Master Lockbox LOTO Procedure



9.5 Satellite Lockbox – Multiple Groups. After each energy isolating device is locked/tagged out and the keys placed into a master lockbox, each servicing/maintenance group principal authorized employee places his personal lock or tag on the master lockbox. Then each principal authorized employee (Crew Leader) inserts his key into a satellite lockbox to which each authorized employee in that specific group affixes his personal lock and tag. Each authorized employee verifies that all hazardous energy has been rendered safe. Only after the servicing/maintenance functions of the specific subgroup have been concluded and the personal locks and tags of the respective employees within the group have been removed from the satellite lock-box can the principal authorized employee remove his key from the satellite box and remove his lock from the master lock-box. A primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device.

9.6 Figure 5 – Satellite Lockbox LOTO Procedure

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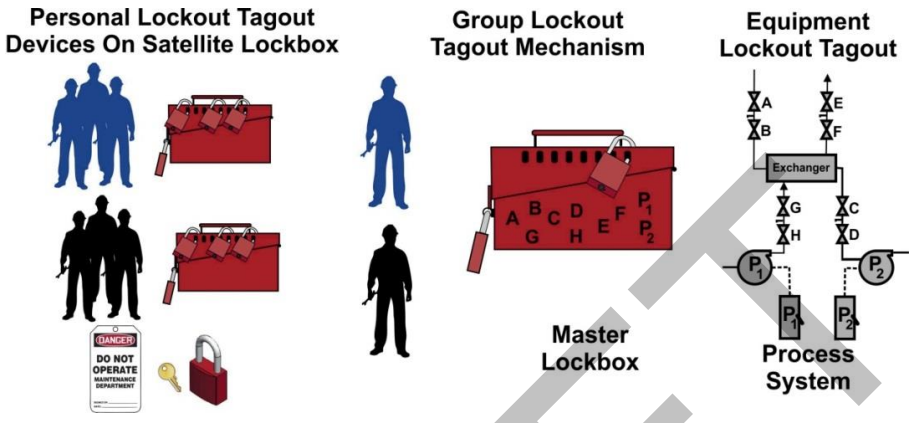

10.0 CONTRACTOR/THIRD-PARTY PERSONNEL

10.1 Whenever contractor/third-party servicing personnel are to be engaged in activities covered by the scope and application of this program, they shall be required to abide by the standards which are most protective of human health and safety, whether those be the standards defined in this program or those set forth in the contracting company's internal program. Prior to the start of work, AlexRenew's safety department and/or maintenance department and the outside employer shall meet to discuss expectations in regards to LOTO.

10.2 AlexRenew employees who will be engaged in the work to be conducted by the contractors/third parties shall be expected to understand and comply with the restrictions and prohibitions of both AlexRenew and the outside employer's energy control programs.

10.3 Prior to the commencement any work on site which shall require the use of LOTO, the contracting company or their AlexRenew point of contact must complete and submit a Process Shutdown or Equipment Removal from Service Notice (Appendix D). The AlexRenew point of contact shall determine the appropriate amount of time needed for the notice based on the equipment/process requiring shut down. Notices shall be reviewed and approved prior to the commencement of work.

10.4 An AlexRenew Supervisor or their designee will conduct a system walk down with contractor personnel for work on any system requiring lockout tagout on AlexRenew property. The AlexRenew point of contact and all contractor personnel will apply LOTO devices utilizing the group lockout tagout procedures outlined above. Prior to beginning work, the AlexRenew Supervisor or designee and all contractor personnel will verify the

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isolation of all sources of hazardous energy.

10.5 Contractor lockout tagout devices must have the word "Contractor" and the company's name and phone number either on the tag or on an attached tag or label. The phone number must be a number that is monitored as long as the tags are hanging.

10.6 Removal of a contractor's LOTO device shall be conducted in accordance with the procedures outlined in section 9.0. In addition to contacting the contracted worker who owns the lock, however, the contractor's supervisor shall also be contacted prior to lock removal and prior to return to their return to the work site.

11.0 EMPLOYEE TRAINING AND COMMUNICATION

11.1 Training will be provided to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following components described below.

11.2 Authorized Employee Training

11.2.1 Authorized employee training shall consist of both a classroom session and a practical "hands-on" training session.

11.2.2 The classroom portion of the training shall include: the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control, ways to verify that energy isolation is effective; and the purpose of the procedures to be used. At the completion of the classroom training session, participants shall be given a written test to assess their comprehension of the material presented. A minimum passing grade for the exam shall be 80%.

11.2.3 The "hands-on" training session will consist of two parts:

11.2.3.1 An Authorized LOTO trainer will walk the participants through the proper isolation, lockout, and verification of a piece of equipment currently not in use.

11.2.3.2 In pairs, participants will be tasked with applying the proper lockout tagout procedures to another piece of equipment currently not in use (separate from

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the practice equipment locked out earlier). Verification that the procedures have been followed will be conducted by a Supervisor who will assign either a passing or failing grade to the pair.

11.2.3.2.1 Note: At any time during this examination, employees may ask the trainer questions, which the trainer shall answer. The trainer, however, is expressly forbidden from offering assistance unless it is first sought by the employees.

11.2.4 Employees passing both portions of the authorized employee training shall be issued a paper certificate of training. The certification shall contain the employee's name and dates of training. The Safety Coordinator or HR Manager shall maintain an electronic copy of the training certificate on file for their full term of employment plus 5 years.

11.2.5 Following successful completion of the training, authorized employees shall be assigned by a Supervisor to work with a mentor until the employee has proven competency. The length of this mentoring period shall not be less than 60 days but may be as long as deemed necessary by the supervisor.

11.3 Affected Employee Training

11.3.1 Each affected employee shall receive classroom training wherein they shall be instructed in the purpose and use of the energy control procedure as well as the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out or the removal of locks or tags.

11.3.2 At the completion of the classroom training session, participants shall be given a written test to assess their comprehension of the material presented. A minimum passing grade for the exam shall be 80%.

11.3.3 Employees who receive a passing grade shall be issued a paper certificate of training. The certification shall contain the employee's name and dates of training. The Safety Coordinator or HR Manager shall maintain an electronic copy of the training certificate on file for the full term of employment plus 5 years.

11.4 Retraining

11.4.1 Refresher training shall be provided for all authorized and affected employees

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whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, when there is a change in the energy control procedures, or at a minimum, every two years.

11.4.2 Additional refresher training shall also be conducted whenever an annual evaluation or periodic inspection reveals, or whenever there is reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

11.4.3 The refresher training shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary based on changes to site conditions. Following the adequate completion of the retraining, the employee shall be assigned a competent mentor by their supervisor to assess the employee's knowledge of appropriate LOTO procedures. The duration of this additional mentorship shall be as long as deemed appropriate by the employee's supervisor and/or the Safety Coordinator.

12.0 PROGRAM REVIEW

12.1 This program shall be reviewed regularly to identify and correct any deficiencies found. This review shall be conducted immediately upon identification of a program deficiency or at least annually.

12.2 A periodic inspection/evaluation of the energy control procedure(s) will be conducted at least annually for each authorized employee to ensure that the requirements of the program and the standard are being followed to ensure full employee protection. The periodic inspection will be performed by the Supervisor and/or Safety Coordinator. The inspection will be conducted to identify any program inadequacies that need correcting. The inspection will review the employee's responsibilities under the procedure being inspected.

12.3 AlexRenew will provide certification that the inspection of a LOTO has been performed. The certification will identify the machine on which the lockout/tagout is being utilized, the date of the inspection, names of employees involved, and the name of the individual performing the inspection. These entries will be made on the Periodic Inspection/Evaluation Form (Appendix E). These forms are to be forwarded to the Safety Coordinator and kept on file for a period of time not less than 3 years.

13.0 DISCIPLINARY ACTION

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13.1 Violation of any of the procedures implemented as a part of this program shall be deemed to be a serious health and safety infraction and shall result in immediate disciplinary action up to and including termination of employment in accordance with AlexRenew's Discipline Policy (HR-02).

13.2 If the employee violates of one of these rules but was found to have made a good faith effort to abide by AlexRenew's procedures, the employee shall be removed from the task until retraining can be provided and provided verbal counseling as defined in AlexRenew's Discipline Policy. The employee's supervisor shall make a record of the event and forward that record to the HR manager. One retraining shall be allowed within a two-year period. Subsequent infractions within that time period shall be considered to be a willful violation and shall elicit further disciplinary actions as outlined below.

13.3 Should an employee be found to have knowingly and/or willingly violated any element of this program, they shall be issued a Final Written Warning in congruence with AlexRenew's Discipline Policy, and a Performance Improvement Plan shall be developed and implemented by the employee's supervisor. Should a second such event occur within a two year time period, the employee shall be immediately discharged from duty.

14.0 REFERENCES / RELATED DOCUMENTS

14.1 Appendix A – Procedures for Equipment Requiring Specific LOTO Procedures

14.2 Appendix B – LOTO Verification Checklist

14.3 Appendix C – Approval to Cut/Remove LOTO Device(s) Form

14.4 Appendix D – Process Shutdown or Equipment Removal from Service Notice

14.5 Appendix E – Periodic Inspection/Evaluation Form

14.6 Appendix F – Equipment LOTO Log Sheet

14.7 Appendix G – Group LOTO Device Checkout Sheet

14.8 HR-02 Discipline Policy

14.9 OSHA 29 CFR 1910.147 and 29 CFR 1910.333

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.A1 Procedures for Equipment Requiring Specific LOTO Procedures

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	Exhaust Fans EF-20-1001	6
	Air Handling Units AHU-20-1002	8
	Exhaust Fans EF-20-1002	8
	Air Handling Units AHU-20-1101	10
	Exhaust Fans EF-20-1101	10
	Air Handling Units AHU-20-1102	12
	Exhaust Fans EF-20-1102	12
	Air Handling Units AHU-20-1201	14
	Exhaust Fans EF-20-1201	14
	Air Handling Units AHU-20-1701	16
	Exhaust Fans EF-20-1701	16
	Air Handling Units AHU-20-1702	18
	Exhaust Fans EF-20-1702	18
	Air Handling Units AHU-20-1801	20
	Exhaust Fans	20

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OHSMS-2.3.A1 Procedures for Equipment Requiring Specific LOTO Procedures

Building	Equipment	Page
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	Air Handling Units AHU-20-1802	22
	Exhaust Fans EF-20-1802	22
55	**Air Handling Units** AHU-55-1001,1002	24
	Exhaust Fans EF-55-1101,1102,1103, and 1104	24
A	**Boiler # 1**	26
	Boiler # 2	27
C	**Air Handling Units** AHU-C-100	28
	Exhaust Fans EF-C-100	28
	Air Handling Units AHU-C-200	30
	Exhaust Fans EF-C-200	30
	Boiler # 1	32
	Boiler # 2	33
F	**Boiler # 1**	34
	Boiler # 2	35
	Post Aeration Blower # 3	36
	W-3 Pump # 3	37
G	**Air Handling Unit** AHU-G1-2001	38
	Return Fan RF-G1-2001	38

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OHSMS-2.3.A1 Procedures for Equipment Requiring Specific LOTO Procedures

Building	Equipment	Page
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	Return Fan RF-G1-6001	40
	Boiler # 1	42
	Boiler # 2	43
J	**Air Handling Unit** AHU-J-2001	44
	Return Fans RF-J-2001	44
	Chiller Chiller #1	46
	Exhaust Fan EF-J1002, 1003	47
K	**Air Handling Units** AHU-K-1001,1002,2001,2002,3001,and 3002	49
	Exhaust Fans EF-K-1001A,1001B,3001,3002,7001 and 7002	49
	Supply Fans SF-K-1001A and 1001B	49
L	**Air Handling Units** AHU-L-1301	51
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	Air Handling Units AHU-L-1302	53
	Exhaust Fans EF-L-1302,1402,1502	53
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	Exhaust Fans	55

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OHSMS-2.3.A1 Procedures for Equipment Requiring Specific LOTO Procedures

Building	Equipment	Page
	EF-L-1701	
	Air Handling Units AHU-L-1901	57
	Exhaust Fans EF-L-1901	57
	Air Handling Units AHU-L-2301	59
	Exhaust Fans EF-L-2301	59
	Air Handling Units AHU-L-2801,2802	61
	Exhaust Fans EF-L-2801,2802	61
N	**UV Influent Sluice Gates** G37-1301, G37-1302	63
	Channel Sluice Gates G38-1501, G38-1502, G38-1503, G38-1504, G38-1505, G38-1506	63
	Ultraviolet Channels **Channels 3 and 4 Electrical Panels**	65

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CAUTION

THIS EQUIPMENT IS POWERED BY MORE THAN ONE POWER SOURCE

LOCKOUT INSTRUCTIONS

AUTOMATIC TRANSFER SWITCHS

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at both motor control centers in this electrical room
4) Lockout the unit at both motor control centers in this electrical room

5) Check for voltage at Panel's main lugs.

---

6) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all covers.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
7) Unlock the equipment using the reverse sequence

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1001

Exhaust Fans
EF-20-1001

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TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1001 and EF-20-1001
- Perform LOTO at: MCC-20-1A in electrical room 20-101.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-1A in electrical room 20-101.
7) Lockout and tagout both fans listed above at MCC-20-1A in electrical room 20-101.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1002

Exhaust Fans
EF-20-1002

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1002 and EF-20-1002
- Perform LOTO at: MCC-20-1B in electrical room 20-101.
- Multiple Lock Out Points? YES
- Observe all safety rules. Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-1B in electrical room 20-101.
7) Lockout and tagout both fans listed above at MCC-20-1B in electrical room 20-101.

8) **Attempt to start all units at both the HCP and the remote station at the unit.**
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1101

Exhaust Fans
EF-20-1101

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1101 and EF-20-1101
- Perform LOTO at: MCC-20-1A in electrical room 20-101.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-1A in electrical room 20-101.
7) Lockout and tagout both fans listed above at MCC-20-1A in electrical room 20-101.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1102

Exhaust Fans
EF-20-1102

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1102 and EF-20-1102
- Perform LOTO at: MCC-20-1B in electrical room 20-101.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-1B in electrical room 20-101.
7) Lockout and tagout both fans listed above at MCC-20-1B in electrical room 20-101.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1201

Exhaust Fans
EF-20-1201

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1201 and EF-20-1201
- Perform LOTO at: MCC-20-1A in electrical room 20-101.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-1A in electrical room 20-101.
7) Lockout and tagout both fans listed above at MCC-20-1A in electrical room 20-101.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1701

Exhaust Fans
EF-20-1701

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1701 and EF-20-1701
- Perform LOTO at: MCC-20-2B in electrical room 20-104.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-2B in electrical room 20-104.
7) Lockout and tagout both fans listed above at MCC-20-2B in electrical room 20-104.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1702

Exhaust Fans
EF-20-1702

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1702 and EF-20-1702
- Perform LOTO at: MCC-20-2A in electrical room 20-104.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-2A in electrical room 20-104.
7) Lockout and tagout both fans listed above at MCC-20-2A in electrical room 20-104.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

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CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1801

Exhaust Fans
EF-20-1801

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TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag AHU-20-1801 and EF-20-1801
- Perform LOTO at: MCC-20-2B in electrical room 20-104.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-2B in electrical room 20-104.
7) Lockout and tagout both fans listed above at MCC-20-2B in electrical room 20-104.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 20

Air Handling Units
AHU-20-1802

Exhaust Fans
EF-20-1802

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-20-1802 and EF-20-1802
- Perform LOTO at: MCC-20-2A in electrical room 20-104.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-20-2A in electrical room 20-104.
7) Lockout and tagout both fans listed above at MCC-20-2A in electrical room 20-104.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building 55

Air Handling Units
AHU-55-1001, 1002

Exhaust Fans
EF-55-1101, 1102, 1103 and 1104

TOOLS NEEDED:
6 Lockout Locks.
6 Lockout Tags.
6 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, and Exhaust Fans.
- Equipment Tag: AHU-55-1001, and 1002
  EF-55-1101, 1102, 1103, and 1104
- Perform LOTO at: MCC-55-1A, 1B and MCC-55-1C in electrical room 55-103.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect all fans at MCC-55-1A, 1B and MCC-55-1C in electrical room 55-103.
7) Use team locks to lockout all 6 fans at MCC-55-1A, 1B and MCC-55-1C in electrical room 55-103. Then place each affected employee's lockout/tagout lock, hasp and lockout tag on the Team Lockout Box per AlexRenew's Control of Hazardous Energy (Lockout/tagout Program).

DRAFT

8) Attempt to start all units at both the HCP and the remote station at unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

BUILDING A

Boiler # 1

TOOLS NEEDED:
6 Lock out locks
6Lock out Tags
6 Lock out Hasps

SAFETY:

- Equipment Name: Boiler 200 hp
- Equipment Tag: M74-1101
- Perform LOTO at: Main MCC in Room A-106.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MCC-A-1A in electrical room (A-106)
4) Lockout the unit at MCC-A-1A in electrical room (A-106)
5) Close and lock out the natural gas valve (orange valve) under the boiler water feed line on the right side of the boiler.
6) Close and lock out the digester gas valve (yellow valve) on the left side to the rear of the boiler.
7) Close two steam valves: one on top of the boiler and one chain valve in front of the boiler.

8) Close and lockout the boiler feed water line on the right side of the Field Panel FP – 11-1101
9) Attempt to start the unit.
10) Upon completion of the work:
    A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
    B. Be sure all tools are stored properly
    C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
11) Unlock the equipment using the reverse sequence

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

BUILDING A

Boiler # 2

TOOLS NEEDED:
6 Lock out locks
6 Lock out Tags
6 Lock out Hasps

SAFETY:

- Equipment Name: Boiler 200 hp
- Equipment Tag: M74-1102
- Perform LOTO at: Main MCC in Room A-106.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MCC-A-1B in electrical room (A-106)
4) Lockout the unit at MCC-A-1B in electrical room (A-106)
5) Close and lock out the natural gas valve (orange valve) under the boiler water feed line on the left side of the boiler.
6) Close and lock out the digester gas valve (yellow valve) on the right side and to the rear of the boiler.

7) Close two steam valves: one on top of the boiler and one chain valve in front of the boiler.
8) Close and lockout the boiler feed water line on the left side of the Field Panel FP-11-1102
9) Attempt to start the unit.
10) Upon completion of the work:
    A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
    B. Be sure all tools are stored properly
    C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
11) Unlock the equipment using the reverse sequence

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building C

Air Handling Unit
AHU-C-100

Exhaust Fan
EF-C-100

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-C-100 and EF-C-100
- Perform LOTO at: MCC-MT-1 in electrical room C-108.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURES:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans at MCC-MT-1 listed above in electrical room C-108.
7) Lockout and tagout both fans listed above at MCC-MT-1 in electrical room C-108.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building C

Air Handling Units
AHU-C-200

Exhaust Fans
EF-C-200

DRAFT

TOOLS NEEDED:
2 Lockout locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-C-200 and EF-C-200
- Perform LOTO at: MCC-MT-1 in electrical room C-108.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans at MCC-MT-1 listed above in electrical room C-108.
7) Lockout and tagout both fans listed above at MCC-MT-1 in electrical room C-108.

8) Attempt to start all units at both the HCP and the remote station at the unit
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building C

Boiler # 1

DRAFT

TOOLS NEEDED:
6 Lockout Locks
6 Lockout Tags
6 Lockout Hasps

SAFETY:

- Equipment Name: Building C Boiler 1
- Equipment Tag:
- Perform LOTO at: Main MCC in Room A-106.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at the disconnect to the right of the boiler next to the exhaust stack.
4) Lockout the unit at the disconnect to the right of the boiler next to the exhaust stack.
5) Close and lock out two natural gas valve (orange valve) on the left side and towards the rear of the boiler.
6) Close and lockout the steam valve with the chain valve between the two boilers

7) Close and lockout the boiler feed water line with two valves on the loop on the right side of the boiler.
8) Attempt to start the unit.

9) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
10) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building C

Boiler # 2

DRAFT

TOOLS NEEDED:
6 Lockout Locks
6 Lockout Tags
6 Lockout Hasps

SAFETY:

- Equipment Name: Boiler 300 hp
- Equipment Tag
- Perform LOTO at: Disconnect in the Boiler Room.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURES:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at the disconnect on the wall to the right of the boiler.
4) Lockout the unit at the disconnect on the wall to the right of the boiler.
5) Close and lock out the two natural gas valve (orange valve) on the left side and towards the rear of the boiler.
6) Close and lockout the steam valve with the chain valve between the two boilers

7) Close and lockout 2 valves for the boiler feed water lines on the loop on the right side of the boiler
8) Attempt to start the unit.
9) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
10) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building F

Boiler # 1

DRAFT

TOOLS NEEDED:
4 Lock out locks
4 Lock out Tags
4 Lock out Hasps

SAFETY:

- Equipment Name:
- Equipment Tag
- Perform LOTO at: Main MCC in Room 28.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MC -2 on the right side of MCC in electrical room F-104
4) Lockout the unit at MC -2 on the right side of MCC in electrical room F-104
5) Close and lock out two natural gas valves (orange valves) on the left side the rear of the boiler.
6) Close two steam valves with the chain valves above the boiler

7) Close and lockout two valves for the boiler feed water lines on the loop on the left side and above the boiler
8) Attempt to start the unit.

9) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
10) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building F

Boiler # 2

DRAFT

TOOLS NEEDED:
4 Lockout Locks
4 Lockout Tags
4 Lockout Hasps

SAFETY:

- Equipment Name:
- Equipment Tag
- Perform LOTO at: Main MCC in Room 28.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit MC-2 Buss # 2 left side of the MCC in electrical room F-104
4) Lockout the unit MC-2 Buss # 2 left side of the MCC in electrical room F-104
5) Close and lock out two natural gas valves (orange valves) on the left side, towards the rear of the boiler.
6) Close the steam valve with the chain valve above the boiler

7) Close and lockout two valves for the boiler feed water lines on the loop on the right side and above the boiler
8) Attempt to start the unit.

9) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
10) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building F

Post Aeration Blower #3

DRAFT

TOOLS NEEDED:
2 Lockout Locks
2 Lockout Tags
2 Lockout Hasps

DRAWING INFORMATION:
- Contract # 1
- Sheet # 205

SAFETY:
- Equipment Name: POST AERATION BLOWER #3
- Equipment Tag: # B38-1003
- Perform LOTO at: Main MCC in Room F-104.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:
1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MCC-F-1A and MCC-F-1B electrical room (F-104)
4) Lockout the unit at MCC-F-1A and MCC-F-1B in elec. room (F-104)
5) When the (blower or piping) is to be opened, close and lockout/tagout both the inlet and discharge valves.

6) Attempt to start the unit at both the PLC and the remote station at the unit
7) Return both start stations to the off position.
8) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all covers.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
9) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building F

W3 Pump #3

DRAFT

TOOLS NEEDED:
2 Lockout Locks
2 Lockout Tags
2 Lockout Hasps

DRAWING INFORMATION:
- Contract # 1
- Sheet # 205

SAFETY:
- Equipment Name: W3 PUMP #3
- Equipment Tag: # P55-1003
- Perform LOTO at: Main MCC in Room F-104.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURES:
1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MCC-F-1A and MCC-F-1B electrical room (F-104)
4) Lockout the unit at MCC-F-1A and MCC-F-1B in elec. room (F-104)
5) When the (pump or piping) is to be opened close and lockout/tagout both the inlet and discharge valves.

6) Attempt to start the unit at both the PLC and the remote station at the unit
7) Return both start stations to the off position.
8) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all covers.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
9) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building G1

Air Handling Units
AHU-G1-2001

Return Fans
RF-G1-2001

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Return Fans.
- Equipment Tag: AHU-G1-2001, and RF-G1-2001
- Perform LOTO at: MCC-G1-1A and 1B in electrical room G1-B10.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect all both fans at MCC-G1-1A and 1B listed above in electrical room G1-B10.
7) Lockout and tagout both fans listed above at MCC-G1-1A and 1B in electrical room G1-B10.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building G1

Air Handling Units
AHU-G1-6001

Return Fans
RF-G1-6001

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Return Fans.
- Equipment Tag: AHU-G1-6001, and RF-G1-6001
- Perform LOTO at: MCC-G1-1A in electrical room G1-B10.
- Multiple Lock Out Points: YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURES:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans at MCC-G1-1A listed above in electrical room G1-B10.
7) Lockout and tagout both fans listed above at MCC-G1-1A in electrical room G1-B10.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return both start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building G

Boiler # 1

DRAFT

TOOLS NEEDED:
4 Lockout Locks
4 Lockout Tags
4 Lockout Hasps

SAFETY:

- Equipment Name: Boiler #1
- Equipment Tag:
- Perform LOTO at: Main MCC in Room 28.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit the MCC in room 28
4) Lockout the unit at MCC in room 28
5) Close and lock out two natural gas valves (2 orange valves) on the left side of the boiler.
6) Close the steam valve: one chain valve in front of and above the boiler.

7) Close and lockout the boiler feed water line on the right side the boiler.
8) Attempt to start the unit.
9) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
10) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building G

Boiler # 2

DRAFT

TOOLS NEEDED:
4 Lockout Locks
4 Lockout Tags
4 Lockout Hasps

SAFETY:

- Equipment Name: Boiler 200 hp
- Equipment Tag
- Perform LOTO at: MCC in Room 28.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURES:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MCC in room 28
4) Lockout the unit at MCC in room 28
5) Close and lock two natural gas valves (2 orange valves) on the left side of the boiler.
6) Close the steam valve: one chain valve in front of/ to the left of and above the boiler.

7) Close and lockout the boiler feed water line on the right side of the boiler.
8) Attempt to start the unit.
9) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all piping and covers or doors.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
10) Unlock the equipment using the reverse sequence

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building J

Air Handling Units
AHU-J-2001

Return Fans
RF-J-2001

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Return Fans.
- Equipment Tag: AHU-J-2001, and RF-J-2001
- Perform LOTO at: MCC-J-4C in electrical room J-B07.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-J-4C in electrical room J-B07.
7) Lockout and tagout both fans listed above at MCC-J-4C in electrical room J-B07.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.
10) Upon completion of the work:

A. Be sure all fans are reassembled properly to include all safety covers.

B. Be sure all tools are stored properly.
C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.

11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building J

Chiller #1

TOOLS NEEDED:
2 Lockout Locks
2 Lockout Tags
2 Lockout Hasps

SAFETY:

- Equipment Name — CHILLER #1
- Equipment Tag: — # Ch-J-1001
- Perform LOTO at: — Main MCC in J Building HVAC ROOM.
- Multiple Lock Out Points? — YES
- Special Considerations: — Use Proper PPE

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at SWBD-J-1A and SWBD-J-1B in (HVAC EQUIPMENT ROOM)
4) Lockout the unit at SWBD-J-1A and SWBD-J-1B in (HVAC EQUIPMENT ROOM)
5) When the (compressor or piping) is to be opened, close and lockout/tag out both the inlet and discharge valves.

6) Attempt to start the unit at both the HVAC CONTROL PANEL and the remote station at the unit
7) Return both start stations to the off position.
8) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all covers.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
9) Unlock the equipment using the reverse sequence

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building J

Exhaust Fan
EF-J-1002, 1003

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Exhaust Fans
- Equipment Tag: Exhaust Fan, EF-J-1002,1003
- Perform LOTO at: MCC-J-4C in electrical room J-B07.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-J-4C in electrical room J-B07.
7) Lockout and tagout both fans listed above at MCC-J-4C in electrical room J-B07.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building K

Air Handling Units
AHU-K: 1001, 1002, 2001, 2002 3001 and 3002

Exhaust Fans
EF-K-1001A, 1001B, 3001, 3002, 7001 and 7002

Supply Fans
SF-K-1001A and 1001B

DRAFT

TOOLS NEEDED:

14 Group lockout locks and team lockout/tagout lock box.
1 Lockout Lock for each worker.
14 Lockout Tags.
1 Lockout Tag for each worker.
1 9/16 Wrench or Socket and Ratchet.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE. EF-K 7001 AND 7002 MUST HAVE STOP PLATES LOWERED, SEE INSTRUCTIONS ON NEXT PAGE, LINE #10

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans and Supply Fans.
- Equipment Tag: AHU-K-1001, 1002, 2001,2002 3001 and 3002
  EF-K-1001A, 1001B 3001, 3002, 7001 and 7002
  SF-K-1001A and 1001B
- Perform LOTO at: MCC-K-1A and MCC-K-1B in electrical room K-105.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURES:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.

5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect all fans listed above, at MCC-K-1A and MCC-K-1B in electrical room K-105.
7) Use team locks to lockout all 14 fans at MCC-K-1A and MCC-K-1B in electrical room K-105. Then place each affected employee's lockout/tagout lock, hasp and lockout tag on the Team Lockout/tagout Box per AlexRew's Control of Hazardous Energy (Lockout/tagout Program).

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.
10) To lower stop plate on units EF-K- 7001 and 7002, hold plate at the top loosen the two 3/8 bolts using a 9/16 wrench or socket and slide plate down into place.

11) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Raise stop plates on units EF-K-7001 and 7002 and tighten both 3/8 bolts using the reverse sequence listed above in step 10.
    C. Be sure all tools are stored properly.
    D. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
12) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building L

Air Handling Units
AHU-L-1301

Exhaust Fans
EF-L-1301, 1401, 1501

DRAFT

TOOLS NEEDED:
4 Lockout Locks.
4 Lockout Tags.
4 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-L-1301 and EF-L- 1301, 1401, 1501
- Perform LOTO at: MCC-L-1B, 1C and MCC-L-1D in electrical room L-302.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect all fans listed above, at MCC-L-1B, 1C and MCC-L-1D in electrical room L-302.
7) Lockout and tagout all 4 fans listed above at MCC-L-1B, 1C and MCC-L-1D in electrical room L-302.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building L

Air Handling Units
AHU-L-1302

Exhaust Fans
EF-L-1302, 1402, 1502

DRAFT

TOOLS NEEDED:
4 Lockout Locks.
4 Lockout Tags.
4 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-L-1302 and EF-L- 1302, 1402, 1502
- Perform LOTO at: MCC-L-1B, 1C and MCC-L-1D in electrical room L-302.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect all fans listed above, at MCC-L-1B, 1C and MCC-L-D in electrical room L-302.
7) Lockout and tagout all 4 fans listed above at MCC-L-1B, 1C and MCC-L-1D in electrical room L-302.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building L

Air Handling Units
AHU-L-1701

Exhaust Fans
EF-L-1701

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-L-1701 and EF-L-1701
- Perform LOTO at: MCC-L-1C in electrical room L-302.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-L-1C in electrical room L-302.
7) Lockout and tagout both fans listed above at MCC-L-1C in electrical room L-302.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building L

Air Handling Units
AHU-L-1901

Exhaust Fans
EF-L-1901

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-L-1901 and EF-L-1901
- Perform LOTO at: MCC-L-1D in electrical room L-302.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-L-1D in electrical room L-302.
7) Lockout and tagout both fans listed above at MCC-L-1D in electrical room L-302.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

DRAFT

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building L

Air Handling Units
AHU-L-2301

Exhaust Fans
EF-L-2301

DRAFT

TOOLS NEEDED:
2 Lockout Locks.
2 Lockout Tags.
2 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-L-2301 and EF-L-2301
- Perform LOTO at: MCC-L-1C in electrical room L-302.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect both fans listed above at MCC-L-1C in electrical room L-302.
7) Lockout and tagout both fans listed above at MCC-L-1C in electrical room L-302.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building L

Air Handling Units
AHU-L-2801, 2802

Exhaust Fans
EF-L-2801, 2802

TOOLS NEEDED:
4 Lockout Locks.
4 Lockout Tags.
4 Lockout Hasps.

CAUTION – ALL FANS MUST BE LOCKED OUT TO ACEIVE A ZERO ENERGY STATE

SAFETY:

- Equipment Names: Air Handling Units, Exhaust Fans.
- Equipment Tag: AHU-L-2801, 2802, and EF-2801, 2802
- Perform LOTO at: MCC-L-1D in electrical room L-302.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper Arc Flash PPE while opening or closing breakers.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Ensure fire alarm system has been called out of service.
3) Shut down all fans listed above using normal procedures.
4) Don Arc Flash PPE.
5) Set up Arc Flash protection boundary per the Arc Flash labels.
6) Disconnect all fans listed above, at MCC-L-1D in electrical room L-302.
7) Lockout and tagout all 4 fans listed above at MCC-L-1D in electrical room L-302.

8) Attempt to start all units at both the HCP and the remote station at the unit.
9) Return all start stations to the off position.

DRAFT

10) Upon completion of the work:
    A. Be sure all fans are reassembled properly to include all safety covers.
    B. Be sure all tools are stored properly.
    C. Notify all affected employees that the lockouts are to be removed and the equipment is to be started.
11) Unlock all fans using the reverse sequence.

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building N

UV Influent Sluice Gates
G37-1301, G37-1302

Channel Sluice Gates
G38-1501, G38-1502, G38-1503,
G38-1504, G38-1505, G38-1506

DRAFT

TOOLS NEEDED:
2 Lockout Locks
2 Lockout Tags
2 Lockout Hasps

SAFETY:

- Equipment Name: UV Influent Sluice Gate #1, UV Influent Sluice Gate #2, Channel #1 Sluice Gate, Channel #2 Sluice Gate, Channel #3 Sluice Gate, Channel #4 Sluice Gate, Channel #5 Sluice Gate, Channel #6 Sluice Gate
- Equipment Tag Numbers: G37-1301, G37-1302, G38-1501, G38-1502, G38-1503, G38-1504, G38-1505, G38-1506
- Perform LOTO at: N-DP4 in Room N-102.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE.

LOTO PROCEDURE:

1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at N-DP4 in electrical room N-102
4) Lockout/tagout the unit at the disconnect at N-DP4

5) Attempt to start the unit at both the PLC and the remote station at the gate.
6) Return both start stations to the off position

7) Move the declutching leaver to the motor position.
8) Lockout/tagout the declutching leaver.

9) Attempt to move the gate up or down by turning the manual wheel. (It should not move)

10) Upon completion of the work:
    A. Be sure the equipment is reassembled properly to include all covers.
    B. Be sure all tools are stored properly
    C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
11) Unlock the equipment using the reverse sequence

DRAFT

CAUTION

THIS EQUIPMENT REQUERS MORE THAN ONE LOCKOUT

LOCKOUT INSTRUCTIONS

Building N

Ultraviolet Channel 3 and 4 Electric Panel

DRAFT

TOOLS NEEDED:
2 Lockout Locks
2 Lockout Tags
2 Lockout Hasps

DRAWING INFORMATION
- Contract # 1
- Sheet # 506

SAFETY:
- Equipment Name: Ultraviolet Channel 3 and 4 Electric Panel
- Equipment Tag: N-DP3
- Perform LOTO at: Main MCC in Room N-102.
- Multiple Lock Out Points? YES
- Special Considerations: Use Proper PPE

LOTO PROCEDURE:
1) Notify all affected employees of the impending lockout.
2) Shut down equipment using normal procedures
3) Disconnect the unit at MCC-N-1A and MCC-N-1B electrical room (N-102)
4) Lockout the unit at MCC-N-1A and MCC-N-1B in electrical room (N-102)

5) Check for voltage at Panel's main lugs.
6) Upon completion of the work:
   A. Be sure the equipment is reassembled properly to include all covers.
   B. Be sure all tools are stored properly
   C. Notify all affected employees that the lockout is to be removed and the equipment is to be started.
7) Unlock the equipment using the reverse sequence

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.B LOTO Verification Checklist

The following checklist is to be completed after locking out equipment but prior to beginning any work on the equipment.

Name of Lead Authorized Employee:	**Date:**	
Equipment/Machined locked out:	**Number of energy isolating devices with LOTO devices installed:**	
Names of Other Authorized Employee's involved in the work:		

Verification

Has the control room been notified that the equipment is being locked out?	☐ Yes ☐ No
Has the equipment been shut down?	☐ Yes ☐ No
Has each source of hazardous energy been isolated from the equipment?	☐ Yes ☐ No
Has every employee involved in the work applied their LOTO devices?	☐ Yes ☐ No
Has the control room attempted to start the equipment remotely?	☐ Yes ☐ No
Have you attempted to start the equipment manually?	☐ Yes ☐ No
Has a voltage meter or similar device been used to ensure all electrical circuits are de-energized?	☐ Yes ☐ No
Have all pressurized lines been blocked or disconnected and all pressure bled off?	☐ Yes ☐ No
Has any potential for stored energy been removed or blocked?	☐ Yes ☐ No

I verify that I have completed and verified the isolation of all hazardous energy sources associated with this piece of equipment. I have notified all affected employees of the lockout of this equipment and all authorized employees working with me have also verified that the equipment is in a zero energy state.

Lead Authorized Employee Name: _____

Lead Authorized Employee Signature: _____

When closing the work request in AVANTIS, attach a copy of the completed document

DRAFT

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.C Approval to Cut/Remove LOTO Devices

The following information and approval is required prior to cutting/removing any LOTO device(s) by anyone other than the authorized employee who applied them.

Name of Authorized Employee whose LOTO Device(s) needs to be removed:		**Date:**
Equipment/Machined locked out:	**Number of energy isolating devices with LOTO devices installed that need removal:**	
Reason for cutting or removing the LOTO devices:		
Verification		
Describe means of verifying that employee is no longer at the site:		
Name of individual performing verification:	**Signature of person who conducted verification:**	
Date/Time verification completed:		
Notification		
Was employee contacted and informed of the need to remove their LOTO device(s)?	☐ Yes ☐ No	
If No describe how the employee will be prevented from reentering the work area until he has been notified of their removal:		
Authorized Employee Signature (On Return):	**Date and Time:**	
Approval:		
Designated Management*:	**Signature:**	
Removal		
Date and Time Removal Completed:	**Completed By**:**	

NOTES:
*Need to designate who is the designated management who must give final approval to cut/remove the LOTO device.
**Need to identify person or job title of person who can cut/remove the LOTO device. This person must be a supervisor or manager.

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.D Process Shutdown/Equipment Removal from Service Notice

Requester Name: _____ Company: _____

☐ Process Shutdown ☐ Equipment Removal

1. What Processes/Equipment will be shut down? _____
   _____
2. Date and time for shutdown: _____
3. Anticipated duration: _____
4. Detailed Reason for shutdown: _____
   _____
   _____
5. Are all tools and materials needed to perform this work on site? ☐ Yes ☐ No
6. Will this shutdown affect the final effluent or biosolids quality? ☐ Yes ☐ No
   a. If so, how? _____
      _____
7. Shift Leader Shutdown Discussion meeting date/time: _____
8. Is a process plan or SOP needed? ☐ Yes ☐ No
   a. If so, list: _____
9. How could adverse weather (rain, snow, wind, cold, heat) affect this shutdown?
   _____
   _____
10. List any concerns: _____
    _____
    _____

SHIFT LEADER, VERIFY PLANT IS NOT IN DANGER OF EXCEEDING 90% THRESHOLD

Requester Signature: _____ Date: _____

Shift Leader Signature: _____ Date: _____

Operations Superintendent Signature: _____ Date: _____

DRAFT

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.E Periodic Inspection/Evaluation

The following checklist is to be completed by a supervisor at least annually for each authorized employee engaged in the control of hazardous energy.

Completed evaluations must be forwarded to the Safety Coordinator for filing.

Name of Authorized Employee:	**Date:**
Equipment/Machined locked out:	**Supervisor:**

Type of Energy Sources:

☐ Electrical ☐ Mechanical ☐ Hydraulic ☐ Stored
☐ Pneumatic ☐ Chemical ☐ Thermal ☐ Other

Is there an energy control procedure for this equipment?	☐ Yes ☐ No ☐ NA
If yes, was the employee provided with a copy of the procedure?	☐ Yes ☐ No ☐ NA
Was the control room notified prior to the start of work?	☐ Yes ☐ No ☐ NA
Were all energy sources verified?	☐ Yes ☐ No ☐ NA
If No, which one(s) were not verified?	
Has the equipment been shut down?	☐ Yes ☐ No ☐ NA
Did the employee apply their LOTO devices properly?	☐ Yes ☐ No ☐ NA
Did the employee verify that the equipment was completely deenergized?	☐ Yes ☐ No ☐ NA
Was the control room contacted to attempt to start the equipment remotely?	☐ Yes ☐ No ☐ NA
Did the employee attempt to start the equipment manually?	☐ Yes ☐ No ☐ NA
Did the employee use a voltage meter or similar device been used to ensure all electrical circuits are de-energized?	☐ Yes ☐ No ☐ NA
Did the employee block or disconnect all pressurized lines and bleed off all pressure?	☐ Yes ☐ No ☐ NA
Did the employee remove or block the potential for stored energy?	☐ Yes ☐ No ☐ NA
If group LOTO has been conducted, are all employees' locks placed such that the equipment cannot be reenergized until all employees LOTO devices are removed?	☐ Yes ☐ No ☐ NA
Were tags filled out appropriately and placed alongside locking devices?	☐ Yes ☐ No ☐ NA

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.E Periodic Inspection/Evaluation

If lockout is not possible for this device, did the employee tag out the equipment AND use at least one additional safety measure to prevent re-energization of the equipment?	☐ Yes ☐ No ☐ NA
Did the employee complete the LOTO Verification Checklist after applying the LOTO devices but before beginning to service the equipment?	☐ Yes ☐ No ☐ NA
Did the employee inspect the area prior to removing LOTO devices to ensure no employees or unnecessary materials were left in the operating area of the equipment?	☐ Yes ☐ No ☐ NA
Were all LOTO devices removed after equipment repair was completed?	☐ Yes ☐ No ☐ NA
Was the equipment walked down with an operator to ensure the equipment can be returned to service safely?	☐ Yes ☐ No ☐ NA

Supervisor Comments:

_____

_____

_____

_____

Employee Comments:

_____

_____

_____

_____

Supervisors Evaluation:

☐ Employee understands and correctly applies AlexRenew's control of hazardous energy procedure

☐ Employee requires additional re-training in the proper control of hazardous energy.

Employee Signature: _____

Supervisor Signature: _____

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Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.F Equipment LOTO Log Sheet

Date	Equipment Name/ID	Authorized Employee:	Time LOTO Began:	Remote Isolation Verification Conducted By:	Date/Time LOTO was removed:	Verification of Equipment Status Conducted By:

DRAFT

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.F Equipment LOTO Log Sheet

Date	Equipment Name/ID	Authorized Employee:	Time LOTO Began:	Remote Isolation Verification Conducted By:	Date/Time LOTO was removed:	Verification of Equipment Status Conducted By:

Instructions:
Date: Enter the date the lockout tagout notification was made
Equipment Name/ID: Enter the name of the equipment and it's identification number
Authorized Employee: Enter the name of the employee conducting the LOTO
Time LOTO Began: Enter the time the equipment was reported as locked and tagged out of service
Remote Isolation Verification Conducted By: Enter the name of the operator that verified that the equipment can not be started remotely
Date/Time LOTO was removed: Enter the date and time that the authorized employee completed and removed their LOTO devices
Verification of Equipment Status Conducted By: Enter the name of the operator that walked down the equipment and returned it back into to service
***NOTE:** If the equipment will be locked out of service for longer than the duration of a single shift, that information must be communicated to the oncoming shift.

DRAFT

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-2.3.G Group LOTO Device Checkout Sheet

Group LOTO Device ID #:	# of LOTO Devices Issued	Authorized Employee (Print Name):	Time/Date Out:	Signature:	Time/Date In:	Signature:

DRAFT

Verification	Originator	Revised	Approved	Current Effective Date
Initials Date	AR 12/2019			

OHSMS-3.1 Hearing Conservation Program

Person responsible: Safety Coordinator

Document location: OHSMS SharePoint

Original issue date: 12/2019

Version Number: 0000

Revisions

Rev. No.	Date	Description
0000	12/2019	Original Document

Recurring action items

Activity	Responsibility	Frequency
1. Review and revise the procedure as necessary.		Annually

Procedure Index

1.0 Purpose

2.0 Scope

3.0 Definitions

4.0 Responsibilities

5.0 Noise Monitoring Program

6.0 Noise Control

7.0 Audiometric Testing

8.0 Employee Training and Communication

9.0 Program Review

10.0 Disciplinary Action

OHSMS-3.1 Hearing Conservation Program

1.0 PURPOSE

1.1 The Hearing Conservation Program (HCP) is intended to prevent occupational hearing loss. The program ensures compliance with the Occupational Safety and Health Administration's (OSHA) Standard 29 CFR 1910.95 *Occupational Noise Exposure.*

1.2 Noise induced hearing loss is an insidious, debilitating disease. Although noise-induced hearing loss is one of the most common occupational illnesses, it is often ignored because there are no visible effects, it usually develops over a long period of time, and, except in very rare cases, there is no pain. What does occur is a progressive loss of communication, socialization, and responsiveness to the environment.

1.3 Work-related hearing loss continues to be a critical workplace safety and health issue. Noise-induced hearing loss is preventable, but once acquired, hearing loss is permanent and irreversible. It is important that prevention measures be taken by employers and workers to maintain the protection of workers' hearing.

2.0 SCOPE

2.1 This program applies to all employees or outside personnel who may have exposures at or above AlexRenew's Action Level as defined below. Employees shall be considered to have occupational exposure to noise if they may be reasonably exposed to noise levels in excess of AlexRenew's Action Level for at least one day in a calendar year. Employees in the Operations and Maintenance Division shall be mandatorily included in this program. All contractors who conduct work on AlexRenew property shall be expected to adhere to the policies and procedures contained herein at a minimum.

2.2 Employees who, through relocation, resignation, termination of employment in their current position, are no longer exposed to high noise areas or have the potential for an exposure in excess of the AlexRenew Action Level may be removed from the hearing conservation program by the Safety Coordinator or HR Manager. This shall occur immediately after 1 full year from the date of the change in employment status.

2.3 The OSHA Occupational Noise Exposure standard 29 CFR 1910.95 establishes a Permissible Exposure Limit (PEL) for occupational noise exposure, and requirements for audiometric testing, hearing protection, and employee training if those sound levels are exceeded. This regulation defines an "Action Level" (AL) as a "dose" of 50%, which is equivalent to an eight-hour time weighted average (TWA) of 85 dBA.

2.4 AlexRenew recognizes that compliance with OSHA's PEL is considered to be the "bare minimum" in protecting worker health, and has chosen to go above and beyond compliance as part of an ongoing commitment to health and safety. As such, AlexRenew has adopted the Threshold Limit Value (TLV) for occupational exposure to noise as recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) of 85 dBA as an 8-hour TWA utilizing a 3 dBA exchange rate as an internal Action Level. Furthermore, AlexRenew shall reduce this Action Level for employees working extended shifts utilizing the following equation:

2.4.1 Action Level = 85 – 10 * Log (T/8) where T = the employee's shift length

2.5 The following table establishes AlexRenew's Action Levels for noise for the most common shift lengths:

Shift Length (hours)	Action Level (dBA)
8	85
9	84.5
10	84

2.6 It should also be noted that noise exposure to intermittent/impact noise at or above 140 dBC shall not be permitted for any duration. Additionally, no employee shall be exposed unprotected to continuous noise greater than 115 dBA.

3.0 DEFINITIONS

3.1 Attenuate – To reduce the amplitude of sound pressure (noise).

3.2 Audible Range – The frequency range over which normal ears hear approximately 20 Hz through 20,000 Hz.

3.3 Audiogram – a graphic representation of the relation of vibration frequency and the minimum sound intensity for hearing.

3.4 Audiometer – A signal generator or instrument for measuring objectively the sensitivity of employees' ability to hear in decibels.

3.5 Audiometric Technician – Person who is trained and qualified to administer audiometric examinations.

3.6 dBA – Sound level in decibels read on the A-scale of a sound-level meter. The A-scale discriminates against very low frequencies (as does the human ear) and is, therefore, better for measuring general sound levels.

3.7 dBC – Sound level in decibels read on the C-scale of a sound level meter. The C-scale is unweighted.

3.8 Decibel (dB) – The unit used to express sound power level.

3.9 Double Hearing Protection – A combination of both ear plugs and ear muff type hearing protection devices is required to be worn by employees who have demonstrated a Temporary Threshold Shift during audiometric examination. Employees who work in work areas that exceed 104 dBA or those who have been advised by a medical doctor should also wear double hearing protection.

3.10 Hearing Conservation Record – An employee's audiometric record. Included names, age, job, classification, time-weighted average (TWA) exposure, date of audiogram, and name of audiometric technician. To be retained for duration of employment plus thirty years for OSHA and kept indefinitely for Worker's Compensation.

3.11 Hearing Protection Device – Items such as earplugs or earmuffs used as protection against hazardous noise.

3.12 NIOSH – National Institute of Occupational Safety & Health.

3.13 Noise – Any undesirable sound.

3.14 Noise Hazard Area – Area where noise levels are equal to or greater than 85 dBA. The area shall be designated with warning signs which say "NOISE HAZARD AREA" or similar language. Hearing protection must be worn anytime 85 dBA is reached or exceeded.

3.15 Noise Hazard Work Practices – Defined as performing or observing work where 85 dBA is equaled or exceeded. Some work practices will be specified, however, as a "rule of thumb" whenever attempting to hold normal conservation with someone who is three (3) feet away and individuals must raise their voice to be heard, then one can assume that an 85 dBA noise level or greater exists and hearing protection is required. Typical examples of work

practices where hearing protection is required: John Deere Tractor, portable grinding operations, operations of landscape equipment, and similar activities.

3.16 Noise Level Measurement – The total sound level within an area includes workplace measurements indicating the combined sound levels of tool noise (from ventilation systems, cooling compressors, circulation pumps, etc.).

3.17 Noise Reduction Rating (NRR) – The number of decibels of sound reduction actually achieved by a particular hearing protection device.

3.18 OSHA – Occupational Safety & Health Administration

3.19 Permanent Threshold Shift (PTS) – Hearing loss with less than normal recovery.

3.20 Presbycusis – Hearing loss due to age.

3.21 Sensorineural – A type of hearing loss characterized as having been induced by industrial noise exposure. This hearing loss type is permanent.

3.22 "Shall" or "Must" – means mandatory for the purposes of this program.

3.23 "Should" or "May" – means recommended for the purposes of this program.

3.24 Temporary Threshold Shift (TTS) – A temporary loss of normal hearing level brought on by brief exposure to high-level sound. TTS is greatest immediately after exposure to excessive noise and progressively diminishes with increasing rest time.

3.25 Time Weighted Average (TWA) – A method of calculating a worker's daily exposure to a hazardous substance (such as chemicals, dusts, fumes, mists, gases, or vapors) or agent (such as occupational noise), averaged to an 8-hour workday, taking into account the average levels of the substance or agent and the time spent in the area.

4.0 RESPONSIBILITY

4.1 The Chief Executive Officer/General Manager provides executive leadership in the development, promulgation, and implementation of the AlexRenew Hearing Conservation Program

4.2 The Safety Coordinator is responsible for the overall implementation, maintenance, oversight, and communication of this program. The Safety Coordinator will conduct, at a

minimum, an annual audit of this program or whenever deficiencies in this program are identified. Additional responsibilities shall include:

4.2.1 Overseeing the training and evaluation of all included employees

4.2.2 Maintaining training records for employees trained as part of this program

4.2.3 Coordinating annual audiometric evaluations for all employees included as part of this program

4.2.4 Communicating abnormal audiometric results to the employee, their supervisor, and the HR Manager

4.2.5 Assessing new equipment prior to its installation for potential noise hazards created by the new equipment

4.2.6 Providing the warehouse with an on-going current approved listing of hearing protection equipment

4.2.7 Coordinating periodic personal noise dosimetry and area noise monitoring as required under this program

4.2.8 Communicating the results of personal noise dosimetry to employees and departments that have been tested

4.2.9 Identify locations on AlexRenew property where a potential high noise environment may exist

4.3 Directors/Deputy General Managers are responsible for:

4.3.1 Supervising the implementation of the Hearing Conservation Program within the department

4.3.2 Reporting potential noise hazards to the Safety Coordinator for further evaluation

4.3.3 Ensuring hearing protection devices as required under this program are available and utilized appropriately by members of their department

4.3.4 Overseeing any disciplinary action undertaken as a part of this program

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4.4 Supervisors are responsible for:

4.4.1 Overall implementation of the Hearing Conservation Program

4.4.2 Assisting in the identification of locations on AlexRenew property where a potential high noise environment may exist

4.4.3 Reporting to the Safety Coordinator any planned installation, removal, or modification of equipment that might alter the noise level of the work areas

4.4.4 Assist in the control of noise hazards through the use of engineering controls, preventative maintenance, and administrative controls

4.4.5 Provide adequate hearing protection devices for employees who are exposed to noise levels that meet or exceed the AlexRenew Action Level established in Section 2.0

4.4.6 Supervise employees' proper use of hearing protection devices in posted high noise areas or when using noisy equipment

4.4.7 Ensure employees are trained on the elements of this program, the effects of noise exposure, and the proper use of noise controls including hearing protection devices

4.4.8 Ensuring that suitable hearing protection is provided to all visitors

4.5 Employees are responsible for:

4.5.1 Knowing the policies and procedures implemented as a part of this program

4.5.2 Properly wearing appropriate hearing protection devices in posted high noise areas or when performing tasks which require the use of hearing protection devices

4.5.3 Report noise hazards and hearing protection device problems to the appropriate supervisor or the Safety Coordinator

4.6 Outside Personnel (contractors) are responsible for:

4.6.1 Adhering to their respective company policy that ensures compliance in a manner

equal to the safety factor provided by the AlexRenew Hearing Conservation Program

4.6.2 Properly wearing appropriate hearing protection devices in posted high noise areas or when performing tasks which require the use of hearing protection devices

4.6.3 Assisting in identifying locations on AlexRenew property where a potential high noise environment may exist due to facility infrastructure or local equipment

4.6.4 Immediately notifying a supervisor and/or AlexRenew point of contact of any hazards encountered

4.6.5 Immediately notifying their AlexRenew point of contact of any work-related injuries/illnesses, near misses, and/or health concerns

5.0 NOISE MONITORING PROGRAM

5.1 Personal Noise Dosimetry

5.1.1 Prior monitoring conducted at AlexRenew has identified that a noise monitoring program is required as part of 1910.95(d) for employees in the Operations and Maintenance Departments. Personal noise dosimetry shall be conducted:

5.1.1.1 Whenever a change is made to the equipment or process that may increase noise exposure such that:

5.1.1.1.1 The attenuation provided by hearing protection devices being used by employees may be rendered inadequate to meet the requirements; or

5.1.1.1.2 Additional employees may be exposed to noise levels above the Action Level

5.1.1.2 Once every three years, at a minimum

5.1.2 Prior to placing into service any newly installed, majorly modified, or translocated equipment, an assessment of the equipment shall be conducted to determine what the effect on noise exposure shall be.

5.1.3 Personal monitoring shall be conducted using a pre- and post- calibrated dosimeter, programmed for A-weighting, slow response, 80 dBA threshold, 85 dBA criterion level, 3 dBA Exchange Rate, and meeting or exceeding the requirements for a Type 2 dosimeter per American National Standards Institute (ANSI) S1.25 "*Specification for Personal Dosimeters".* All continuous, intermittent and impulsive sound levels from 80 - 140 dB shall be integrated into the dosimetry measurement. Monitoring shall be conducted for the full duration of the worker's shift.

5.1.4 Employees shall be notified of results of personal dosimetry within 30 working days. Employees shall be provided the opportunity to observe any noise measurement respective to their work area. Results of personal dosimetry shall be maintained for a minimum of thirty (30) years.

5.2 High Noise Area Monitoring

5.2.1 Areas that are identified through a previous survey, with existing signage or posting, or which contain noisy equipment/machinery when in operation shall have a baseline sound level survey conducted and on record.

5.2.2 Area monitoring shall be conducted using a pre- and post- calibrated sound level meter programmed for A-weighting, slow response, and meeting or exceeding the requirements for a Type 2 SLM per the ANSI S1.4. The difference between the before and after calibration shall be within plus or minus 1 decibel.

5.2.3 Areas below 80 dBA:

5.2.3.1 If peak noise levels are found to be below 80 dBA in an area, no further monitoring is required provided there are no substantial process or equipment changes.

5.2.4 Areas above 80 dBA but below 85 dBA:

5.2.4.1 Areas identified to be at or above 80 dBA, but less than 85 dBA shall be surveyed once every three years, but are not required to be posted.

5.2.4.2 Employees working in such areas are not required to wear hearing protection devices, though it may be provided if the noise causes a nuisance or distraction.

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5.2.4.3 These areas shall be surveyed every three years or whenever there are process or equipment changes which may increase noise levels in the area.

5.2.5 Areas above 85 dBA

5.2.5.1 Areas identified to be at or above the AlexRenew Action Level will be classified as "high noise areas" and shall be surveyed every three years.

5.2.5.2 As part of the identification of high noise areas, appropriate signage shall be posted on all entrances to the area or on the source machinery/equipment if it is intermittently in use by an operator.

5.2.5.3 Anyone entering a posted high noise area must wear proper hearing protection, regardless of the duration spent in the area or whether the person is enrolled in the hearing conservation program.

6.0 NOISE CONTROL

6.1 Engineering controls (any mechanism/design that limits exposure at the source) shall be utilized to reduce high noise levels as much as is feasible as this approach provides a long-term or permanent solution. Specialists in the field of sound physics and with appropriate equipment should be consulted for an assessment before any controls are implemented. Equipment should be properly maintained and when scheduled for replacement, quieter alternatives should be sought for purchase. Upon implementation of engineering controls, new area monitoring must be conducted.

6.2 Hearing Protection Devices

6.2.1 A hearing protection device is a personal safety product that is worn to reduce the harmful auditory effects of noise. Hearing protection devices should be viewed as a last resort, when other means such as engineering and administrative controls are not practical or economical. Personnel who work in high noise areas shall have several options available to them at no cost. Issued devices should not be shared with anyone and should be periodically replaced as necessary. Employees shall be instructed in the proper use and maintenance of hearing protection devices.

7.0 AUDIOMETRIC TESTING

7.1 AlexRenew will establish and maintain an audiometric testing program, by making audiometric testing available to all employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels. This program will be provided at no cost to employees.

7.2 AlexRenew will establish a valid baseline audiogram against which subsequent audiograms can be compared. After obtaining the baseline audiogram, an annual audiogram will be obtained on each employee exposed at or above an 8-hour time weighted average of 85 decibels.

7.3 The baseline audiogram shall be conducted for all new employees entering departments in the hearing conservation program during the pre-placement medical examination or within 6 months of the employee's first exposure to workplace noise.

7.4 Each employee's annual audiogram will be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a threshold shift has occurred. A standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 decibels or more at 2000, 3000, and 4000 Hz in either ear. If a comparison of the annual audiogram indicates a standard threshold shift, steps will be taken by AlexRenew as outlined in OSHA Standard 1910.95.

7.5 If a standard threshold shift is found to have occurred, the employee shall be verbally notified of the abnormality and counseling shall be provided regarding the effects of noise on hearing and the role of hearing protective devices. A follow-up formal written notification shall be provided to the employee within 21 days of the employer receiving report of an abnormal audiogram. A follow-up audiogram shall be performed within 30 days following a mandatory 40-hour quiet period (without exposure to excessive work place and non-occupational or recreational noise) to determine if the audiometric abnormality persists. If the audiometric abnormality is not present on repeat testing, no further action is indicated and the employee shall be returned to the routine testing cycle.

7.6 Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician. Employee audiometric evaluations shall be maintained for the duration of employment plus 30 years.

8.0 EMPLOYEE TRAINING AND COMMUNICATION

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8.1 Training will be provided to ensure that the purpose and function of the hearing conservation program are understood and that the knowledge and skills required for the safe application, usage, and removal of the controls are acquired by employees. This training shall be conducted prior to an employee's initial assignment to an area where exposure to high noise levels is possible, and annually thereafter. The training shall include the following information:

8.1.1 The effects of noise on hearing;

8.1.2 The purpose and use of hearing protectors;

8.1.3 The advantages, disadvantages, and attenuation of various types of protection;

8.1.4 Instruction in the selection, fitting, use and care of protectors; and

8.1.5 The purpose of audiometric testing and an explanation of the test procedures.

9.0 PROGRAM REVIEW

9.1 This program shall be reviewed regularly to identify and correct any deficiencies found. This review shall be conducted immediately upon identification of a program deficiency or at least annually.

10.0 DISCIPLINARY ACTION

10.1 Violation of any of the procedures implemented as a part of this program shall result in immediate disciplinary action in accordance with AlexRenew's Discipline Policy (HR-02).

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Policy Bulletin
Number: SS - 02
Date: 8/2018
Revised: N/A

SUBJECT:
Personal Protective Equipment

PURPOSE

The Personal Protective Equipment policy covers requirements (ear, eye, head and foot protection) however it is not fully encompassing of all PPE requirements. Persons covered include employees (full and part-time), interns, and temporary staffing. The plant campus is defined as the land and buildings surrounding the wastewater treatment plant.

GENERAL PPE REQUIREMENTS

1. Hearing Protection
   In situations where it is not feasible to reduce noise exposure by suitable engineering or administrative controls; personal hearing protectors shall be used to ensure the protection of employees. Locations are marked at the entry point where hearing protection is required. All employees are required to wear hearing protection when working in or passing through these posted noise hazard areas.
2. Safety Glasses
   All employees are required to wear approved safety glasses when performing the following activities:
   - Any processes in the Laboratory.
   - Chipping, hammering, pounding, using powered and non-powered tools or other activities that could create flying debris.
   - Handling materials as required by the safety data sheet.
   - Working on electrical components.
3. Dust Mask
   Employees shall use a dust mask whenever handling chemicals that are not IDLH rated and performing chemical wash activities.
4. Face Shields
   Employees shall wear a face shield when damage to either their eyes and/or face may occur. For example, using a grinder, handling chemicals, fuels, or other materials as required by the applicable MSDS sheet.
5. Gloves
   Employees shall wear appropriate gloves when performing the following activities:
   - Burning or welding.
   - Handling chemicals, fuels or other materials as required by the applicable MSDS.
   - Performing laboratory functions requiring hand protection.
   - Replacing UV Lamps.
   - Working with liquid, solid or semi solid wastewater.
   - First aid procedures that involve contact with blood or bodily fluids.
6. Hard Hats
   Hard hats shall be worn properly at all times in designated areas. Designated areas excluded are the administrative offices, control rooms, lunchrooms, locker rooms or classrooms.

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7. Rubber Boots
   Personnel should wear rubber boots when the work requires standing in water, wastewater, sludge or chemicals. Steel-toed rubber boots or rubber boots large enough to fit over safety shoes should be used.
8. Safety Googles
   Employees shall wear safety googles while sandblasting, grinding, handling chemicals, using power hand tools and machine shop tools. Working with sludge or sludge handling equipment
9. Safety Shoes
   Employees shall wear safety shoes when on duty outside of the administrative offices.

PPE will be regularly cleaned, inspected and stored according to instructions or as directed by supervisors or managers. Defective or damaged PPE shall not be used. Employees are to report any defective or damaged equipment to their supervisor for repair or replacement.

Employees are responsible for safe use and storage of the PPE assigned for their exclusive use. PPE assessments of job tasks may identify additional PPE requirements outside of these general requirements. Employees are expected to be familiar with the hazards associated with their tasks and the PPE requirements to help mitigate those risks. Employees who violate this policy are subject to disciplinary action up to and including termination of employment.

AlexRenew is responsible for providing necessary PPE to employees based on job tasks in accordance with OSHA requirements.

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DOCUMENT APPROVAL/CHANGE HISTORY RECORD

Issue Date	Approvals	Change Description
8/2018		

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Process Safety Management (PSM)

29 CFR 1910.119

ALEXANDRIA RENEW ENTERPRISES

SAFETY STANDARD OPERATING PROCEDURES (SOP)
ALEXANDRIA RENEW ENTERPRISES (AlexRenew)

Process name: Methanol

Facility/Process address: Alexandria Renew Enterprises
1500 Eisenhower Ave.
Alexandria, VA 22313

SOP last updated:

This SOP will be updated by the Safety Manager at least every 3 years. Copies of the two most recent updates will be kept on file.

Policy: Alexandria Renew Enterprises will take all precautions to protect the safety and health of employees, visitors, the community and comply with all federal and state process safety management regulatory requirements, and prevent chemical releases that can lead to catastrophic fires, explosions, or toxic exposures. We will build safety into our processes that involve highly hazardous chemicals and operate the Authority safely throughout its life cycle by identifying process hazards and providing necessary controls over the life of the process.

PROGRAM ADMINISTRATION

PSM Safety Manager

This PSM SOP will be implemented and revised by the Safety Manager, who will be the Administrator of PSM at the Authority. The Safety Manager may authorize other persons to implement one or more elements of this SOP. The names of authorized designees will be entered in the ***Table of Designee and Employee Responsibilities for Process Safety Elements***.

Administrators Name: Alex Rigby
Position: Safety Coordinator
Address: Alexandria Renew Enterprises
Alexandria, VA. 22314
Phone: [W] (703) 549-3382 X 2231
[C] (703) 232-0101

Table of Designee and Employee Responsibilities for Process Safety Elements
[Check off each cell as applicable to your operations, or insert names.]

Element	Authorized Designee /Department	Access to process areas but not during process operations	Present during process operations as witnesses only	Operate, maintain, or test processes
Employee participation	All Operations and Maintenance Staff			

Process Safety Information (PSI)				
Process Hazard Analysis (PHA)				
Operating Procedures	All Operations Staff			
Pre-Start-Up Safety Review	All Operations and Maintenance Staff			
Mechanical Integrity	All Operations and Maintenance Staff			
Hot Work Permit				
Management of Change				
Incident Investigation				
Emergency Planning/Response				
Compliance Audits				
Trade Secrets	None			
Training	Safety Manager and CST			
Contractors				

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I. DEFINITIONS

Atmospheric tank	means a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g. (pounds per square inch gauge, 3.45 Kpa).
Boiling point	means the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760 mm.). For the purposes of this section, where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, the 10 percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D-86-62, which is incorporated by reference as specified in Sec. 1910.6, may be used as the boiling point of the liquid.
Catastrophic	means a major uncontrolled emission, fire, or explosion involving one or more highly hazardous chemicals that present a serious danger to employees in the workplace.
Facility	means the buildings, containers or equipment which contain a process.
Process	means any activity involving a highly hazardous chemical, including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any group of vessels that are interconnected and separate vessels that are located so that a highly hazardous chemical could be involved in a potential release will be considered a single process. Chemical quantities in distinct and separate processes may be compared individually, rather than collectively, to the threshold quantity listed in Appendix A of the PSM rule.
Highly hazardous chemical	means a substance possessing toxic, reactive, flammable, or explosive properties and: • Involves a chemical at or above the specified threshold quantities listed in Appendix A of the PSM rule • A process that involves a flammable liquid or gas as defined in federal regulations at 29 CFR 1910.1200(c) on-site in one location in a quantity of 10,000 pounds (4535.9 kg) or more, except for hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling) if such fuels are not part of a process containing another highly hazardous chemical covered by the PSM rule, and except

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	for flammable liquids stored in atmospheric tanks or transferred that are kept below their normal boiling point without benefit of chilling or refrigeration
Hot work	means work involving electric or gas welding, cutting, brazing, or similar flame- or spark-producing operations.
Management of change	means changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures, and to facilities that affect a covered process.
Process	means any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any group of vessels which are interconnected and separate vessels which are located such that a highly hazardous chemical could be involved in a potential release shall be considered a single process.
UPCP	Unit Process Control Procedure

II. INTRODUCTION

The purpose of this PSM Standing Operating Procedure (SOP) is to prevent releases of highly hazardous chemicals that have the potential to cause catastrophic fires, explosions, or toxic exposures. This objective is achieved by building safety into a process, keeping the Authority operating safely throughout its life cycle, and by identifying process hazards and providing necessary controls over the life of the process.

This SOP is designed to guide personnel who work with threshold quantities of highly hazardous chemicals to successfully implement the requirements of the regulation for Process Safety Management of Highly Hazardous Chemicals 29 CFR 1910.119 and to comply with the safety and health policies of the Authority.

The Authority will comply with all federal, state, and local rules for process safety management.

A. Process Description

The Methanol Pumping, Storage and Containment System is a support system for the Biological Reactor Basins (BRBs). Methanol or acetic acid can be added to the reactor basin influent flow to enhance biological nitrogen removal. These chemicals aid the biological process by increasing the content of readily available organic carbon in the influent wastewater, which the denitrifying microorganisms need to perform their functions.

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The Methanol Facility has been designed to store and feed both 100 percent methanol and 70 percent acetic acid. One hundred percent methanol is a very flammable liquid; therefore, the Authority has special safety features in place, such as a foam fire suppression system and gas detection systems. Plant effluent water (W3) is added downstream of the methanol pumps to dilute the methanol to less than a 23 percent solution, making it non-flammable when it leaves the Methanol Facility building M on its way to feed the BRBs.

The Methanol Pumping, Storage and Containment System has also been designed to store and feed acetic acid if the use of a non-flammable supplemental carbon source is desired. Approximately twice the volume of 70 percent acetic acid is required to feed the same amount of carbon as 100 percent methanol. Since acetic acid is corrosive, most building materials have been selected/constructed for use in a corrosive environment.

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The Methanol Pumping, Storage and Containment System is contained in and next to the Methanol Feed Building (Building M) – which is located between Secondary Settling Tanks 4 and 5

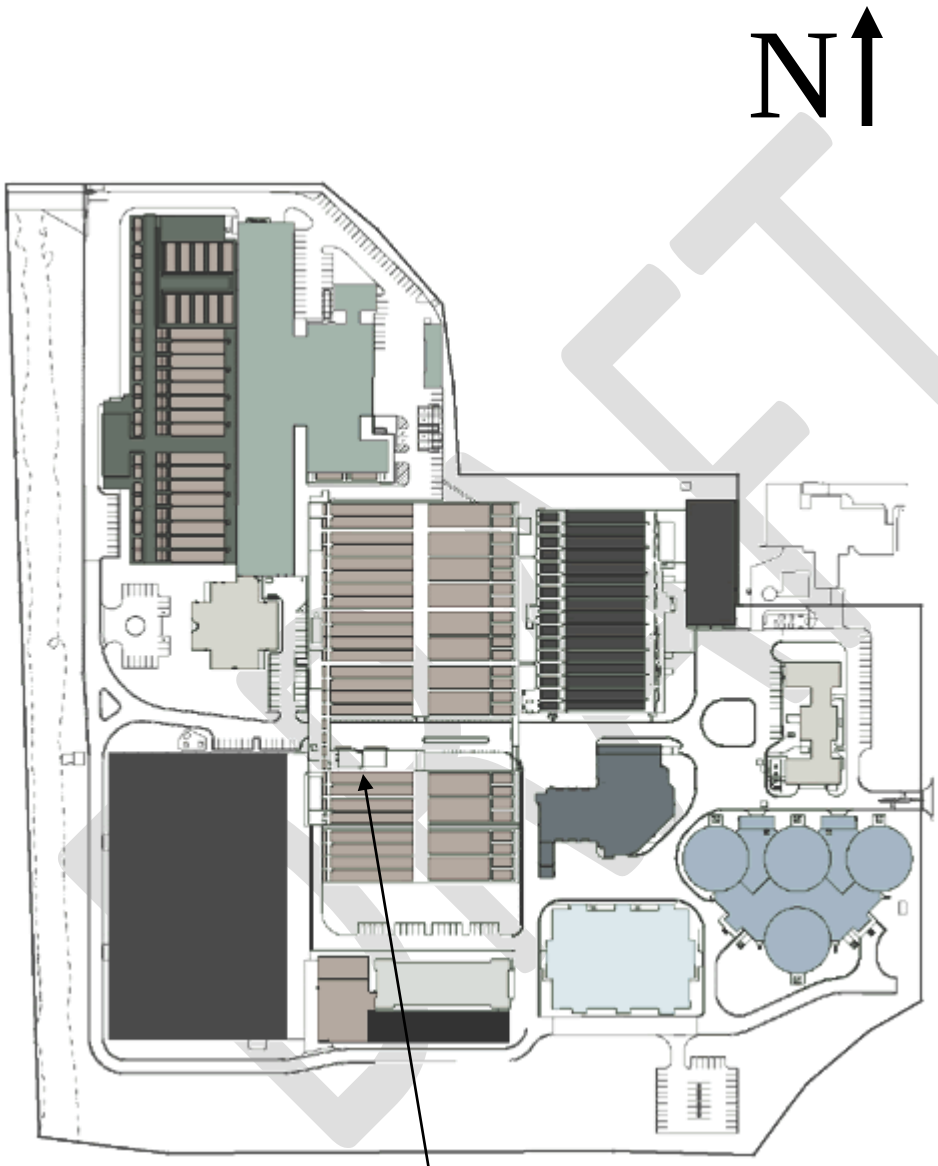

Figure 1 Methanol Feed Building: Building M

Figure 2 Methanol Storage Tanks

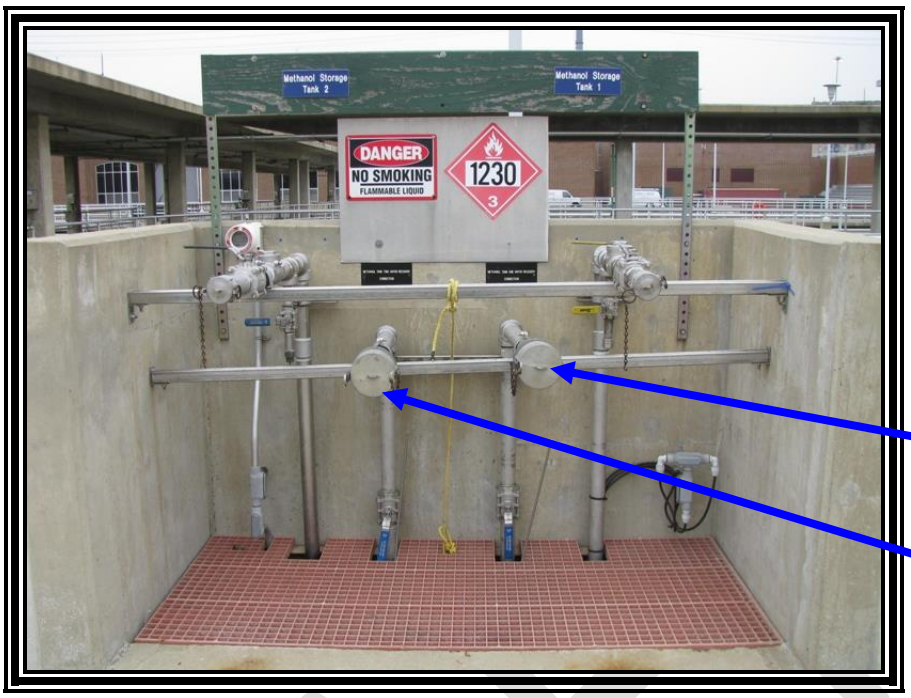

Figure 3 Truck Unloading Station

Figure 4 Methanol Pump Room: Room M-103

The chemical pump room with six chemical feed pumps which can pump up to 150 gph to the BRBs.

Methanol Storage Tanks

Two 8,000-gallon stainless steel storage tanks are located in an outdoor containment area east of building M. The storage tanks are equipped with flame arresters, pressure/vacuum relief system, and a vapor recovery system (Figure 3) that allow fumes to be sent back to the truck unloading facility during filling. Each storage tank has a dedicated level transmitter/sensor. The storage tanks are also equipped with a side manway, magnetic sight glass, and a top manway with an emergency pressure-relief seal, and vacuum/pressure relief valve.

The methanol storage containment area is sized to contain 1.5 times the volume contained in one storage tank. The outside containment area includes a sump that is used to pump rainwater or chemical spillage that may collect in the containment area to the Secondary Settling Tank influent channel (See UPCP #12 – Secondary Settling Tank). There is also one safety shower and eyewash (See Figure 2) located just outside the containment area for use in emergencies.

The storage tanks are filled from a truck unloading station (See Figure 3), located approximately 25 feet to the east of Building M. A separate sump is located under the fill connections to catch leaks from incorrect connections and contain spillage. The sump has a stainless steel eductor to discharge the contents of the sump back to the secondary settling tank influent channel. A safety shower and eyewash station are located to the west of the station.

Our process equipment and technology are designed, installed, and maintained in accordance with

- NFPA 11
- NFPA 13
- NFPA 16
- NFPA 30
- NFPA 70E
- NFPA 72
- NFPA 72E
- Operation and Maintenance Manual (Listed on AlexRenew FIMMS)
  Alexandria Renew Enterprises
  Advanced Wastewater Treatment Facility Upgrade
  Package B, Contract #4 – Nitrogen Compliance Facilities
  Spec Section 13208 – Welded Stainless Steel Tanks
  Methanol Storage Tanks T43-1001/1002
  PO 2225-9021
  Vendor/Manufacturer:
  Capital City Iron Works, Inc
  PO Box 34548
  Richmond, VA. 23234
  (804) 275-9201
- Operation and Maintenance Manual (Listed on AlexRenew FIMMS)
  Alexandria Renew Enterprises

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Advanced Wastewater Treatment Facility Upgrade
Package B, Contract #4
Section 11240 – Chemical Metering Pumps
Pump Tags – P43-1001 to 2006
Local Rep
Geiger Pump & Equipment Co.
8924 Yellow Brick Road
Baltimore, MD. 21237
Phone: (410) 682-2660

- Fire Protection Systems Operations and Maintenance Instructions (Listed on AlexRenew FIMMS)
National Fire Protection Inc.
515 Dover Road
Rockville, MD 20850
Phone (301) 340-6500

B. Emergency Notification

The facility is protected with an automatic foam fire suppression system and fire alarm.

When the fire alarm activates it alarms at:

- the building foam system alarm panel
- the building Simplex Fire Alarm panel
- strobe at the building
- on AlexRenew's SCADA system
- at the fire alarm panel in buildings L and J.
- at the Simplex dispatching office; (AlexRenew's monitoring company)

If an emergency occurs, it is our policy to notify the Alexandria Fire Department and request that they respond to the emergency. We have discussed and shared this SOP with local emergency response agencies. They have inspected/toured our Methanol facility on many occasions.

AlexRenew's fire plan including those actions required to place the foam fire suppression system back into service ones it has discharged is located in the AlexRenew's Emergency Action Plans titled Building M Emergency Response.

PSM Program Elements

This SOP contains the following elements to manage process-related facilities, equipment, technology, and personnel:

1. Employee Participation Plan of Action
2. Process Safety Information (PSI)

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3. Process Hazard Analysis (PHA)
4. Operating Procedures
5. Pre-Start-Up Safety Review
6. Mechanical Integrity
7. Hot Work Permit
8. Management of Change
9. Incident Investigation
10. Emergency Planning and Response
11. Compliance Audits
12. Trade Secrets
13. Training
14. Contractors

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III. EMPLOYEE PARTICIPATION PLAN OF ACTION

29 CFR 1910.119(c)

The Safety Manager or designee will regularly consult with employees and their representatives on the conduct and development of the Process Hazard Analysis (PHA) and on the development of the other elements of this SOP. All employees and their representatives will be provided access to PHAs and to all other information relevant to their work with highly hazardous substances and processes.

See the attached ***Employee Participation Plan*** for a copy of the procedures for employee participation.

All PSM employees will be properly trained in all areas of handling highly hazardous materials and in the processes that use such materials. See the Training section of this SOP for detailed employee training information.

Safety Committee meetings will be held monthly, at which time hazards related to chemical storage or processing are reiterated. Any concerns, modifications, or changes of procedures will be discussed immediately between employees and supervisors.

The Safety Manager or designee will inform affected employees of the findings from incident investigations.

IV.

V. PROCESS SAFETY INFORMATION (PSI)

29 CFR 1910.119(d)

PSI at the Authority will be used to identify and understand the hazards of a process or processes involving highly hazardous chemicals. PSI will be compiled and documented before conducting the PHA. PSI will also be used to comply with other provisions of this SOP, including:

- Management of change
- Incident investigations

  See
-
- Development of training programs
- Development of operating procedures
- Procedures for contractors whose employees will be working with the process
- Pre-start-up reviews
- Local emergency preparedness plans
- Insurance
- Enforcement

There are three types of PSI at the Authority:

1. Information on the hazards of the highly hazardous chemicals used or produced by the process
2. Information on the technology of the process

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3. Information on the equipment in the process

Chemical Information
The information provided in this SOP and associated attachments about process chemicals, including process intermediates, may be used to assess:

- Fire and explosion characteristics
- Reactivity hazards
- The safety and health hazards to workers
- Corrosion and erosion effects on the process equipment and monitoring tools

Current material safety data sheet (MSDS) information can be used to help meet this requirement, which must be supplemented with process chemistry information, including runaway reaction and over-pressure hazards, if applicable.

See the following attachments for detailed information about the specific highly hazardous chemicals used in processes at the Authority:

- MSDSs for process chemicals
- Process safety information sheets for each process chemical and process
- Chemical inventory form

MSDSs
MSDSs will be readily accessible to all employees.
MSDS procedures. The Safety Manager is responsible for maintaining the MSDS program. The Safety Manager or designee will ensure that procedures are developed to obtain the necessary MSDSs, review incoming MSDSs for new or significant health and safety information, and will see that any new information is communicated to affected employees.

MSDS access. MSDSs will be readily available to all employees during each work shift. The primary method for accessing MSDSs in work areas is *[insert method, e.g., printed copies, computer system, fax-back service name and phone number]*.

Process Technology Information
Information on the technology of the process is attached to this SOP, and includes, as applicable:

- Block flow diagram
- Process flow diagram
- Process chemistry
- Maximum intended inventory
- Safe upper and lower limits for such items as temperatures, pressures, flows, or compositions
- An evaluation of the consequences of deviations, including those affecting the safety and health of employees

Block flow diagram. The block flow diagrams show major process equipment and interconnecting process flow lines, and show flow rates, stream composition, temperatures, and

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pressures when necessary for clarity. See the attached *Block Flow Diagram* for more information.

Process flow diagram. The process flow diagrams show:

- All main flow streams, including valves to enhance the understanding of the process
- Pressures and temperatures on all feed and product lines within all major vessels, in and out of headers and heat exchangers, and points of pressure and temperature control
- Materials of construction information
- Pump capacities and pressure heads
- Compressor horsepower and vessel design pressures and temperatures (when necessary for clarity)
- Major components of control loops
- Key utilities on process flow diagrams

See the attached *Process Flow Diagram* for more information.

Piping and instrument diagrams (P&IDs). P&IDs will be used to show certain details of the process flow diagram and display the information for the piping designer and engineering staff. P&IDs describe the relationships between equipment and instrumentation as well as other relevant information to enhance clarity.

Process Technology Information Documentation

Documentation for information pertaining to process equipment design will include the codes and standards relied on to establish good engineering practice. Where the original technical information no longer exists, such information will be developed in conjunction with the process hazard analysis.

Equipment in the Process

The Safety Manager or designee will ensure that process equipment complies with recognized and generally accepted good engineering practices, and that all equipment is designed, maintained, inspected, tested, and operated in a safe manner. The following information about the equipment in the process(es) will be documented:

- Materials of construction
- Piping and instrument diagrams
- Electrical classification
- Relief system design and design basis
- Ventilation system design
- Design codes and standards employed
- Material and energy balances for processes
- Safety systems (e.g., interlocks, detection, or suppression systems)

All equipment complies with recognized and generally accepted good engineering practices.

PSI Documentation

The minimum written PSI package template needed to support a PSM program is available *[insert location]*.

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See the attached *PSI Compilation Checklist* for more information about the PSI package.

All PSI does not have to be in one document or in one place but should be accessible to all employees who need it to safely perform their jobs. PSI may be stored in a central location as long as this level of document control does not hamper worker access to up-to-date PSI. Workers must be able to find PSI information easily. PSI documents are available for review *[insert location]*.

The PSI package will be updated as part of the ***Management of Change*** element of this SOP.

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PROCESS HAZARD ANALYSIS
29 CFR 1910.119(e)

PHAs will be used to identify causes and consequences of potential accidents associated with equipment, instrumentation, utilities, human performance, external factors, and natural phenomena. The objective of PHA is to determine areas of excessive risk where prevention and control measures may be warranted to mitigate hazards.

The Safety Manager, designee, or authorized PHA team will perform an initial PHA on all processes at the Authority involving highly hazardous chemicals. The PHA will identify and evaluate the hazards of processes and prescribe the means to control such hazards.
See the attached *PHA Team Member Qualifications* form for more information about the PHA team.

The Safety Manager or designee will establish the priority ranking order for conducting PHAs on the basis of such considerations as the:
- Extent of the process hazards
- Number of potentially affected employees
- Age of the process
- Operating history of the process

The basis for the ranking will be documented and kept on file with other PSM documentation. The Safety Manager or designee will complete the required PHAs before process start-up.

PHA Methodology
The Safety Manager or designee will use one or more of the following methods, as appropriate, to determine and evaluate the hazards of the process being analyzed:
- What if
- Checklist
- What if/checklist
- Hazard and operability study
- Failure mode and effects analysis
- Fault tree analysis
- An appropriate equivalent methodology

PHA Factors
The PHA will address:
- The hazards of the process
- The identification of any previous incident that had a potential for catastrophic consequences in the workplace
- Engineering and administrative controls applicable to the hazards and their interrelationships, including application of detection methodologies to provide early warning of releases, such as process monitoring and control instrumentation with alarms, and detection hardware
- Consequences of failure of engineering and administrative controls
- Authority siting

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- Human factors
- A qualitative evaluation of the possible safety and health effects on employees in the workplace if there is a failure of controls

PHA Findings and Recommendations

The Safety Manager or designee will promptly address the PHA findings and recommendations in the following sequence of actions:

1. Ensure that the recommendations are resolved in a timely manner and that the resolutions are documented.
2. Document what actions are to be taken.
3. Develop a written schedule of when these corrective actions are to be completed and document the basis for the amount of time needed, whether through a Management of Change system or other procedure.
4. Complete actions as soon as possible.
5. Communicate the actions to operating, maintenance, and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

Rejection of Recommendations

The Safety Manager or designee may reject a recommendation where it can be documented that one of the following conditions are true:

- The recommendation is based on factual errors.
- The recommendation is not necessary to protect health and safety.
- An alternative measure can provide a sufficient level of protection.
- The recommendation is infeasible.

Documentation, Recordkeeping, and Record Update

Written PHAs, records of updates, or revalidation for each process, as well as the documented resolution of recommendations, will be maintained for the life of the process. The PHA will be updated and revalidated at least every 5 years.

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STANDARD OPERATING PRACTICES (SOPs)

29 CFR 1910.119(f)

The Safety Manager or designee will implement written SOPs, consistent with the PSI, that provide clear instructions for safely conducting activities involved in each covered process. The PSI materials will be used as a resource to ensure that the operating procedures and practices are consistent with the known hazards of the chemicals in the process and that the operating parameters are accurate.

See the attached *Standard Operating Procedures* form for detailed information about SOPs.

SOP Review

SOPs will be periodically reviewed by engineering staff and operating personnel to ensure that they are accurate and provide practical instructions to employees on how to carry out job duties safely.

SOP Elements

SOPs will be developed and implemented to address the steps for each of the following process operating phases:

- Initial start-up
- Normal operations
- Temporary operations
- Emergency shutdown, including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner
- Emergency planning and response
- Normal shutdown
- Start-up following a turnaround or after an emergency shutdown
- Consequences of deviation and steps required to correct or avoid deviation

SOPs will also include specific safety and health considerations related to the hazards presented by the chemicals used in the process, and precautions necessary to prevent exposure, including:

- Engineering and administrative controls
- Personal protective equipment (PPE)
- Control measures to be taken if physical contact or airborne exposure occurs
- Quality control for raw materials and control of hazardous chemical inventory level
- Any special or unique hazards
- Safety systems (e.g., interlocks, detection or suppression systems) and their functions

SOPs for Related Work Activities

The Safety Manager or designee will also develop and implement SOPs for PSM-related work activities such as:

- Lockout/tagout
- Confined space entry
- Opening process equipment or piping

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- Control over entrance into AlexRenew by maintenance, contractor, laboratory, or other support personnel

Computerized Process Control Systems
Computerized process control systems add complexity to operating instructions. Therefore, operating instructions for such systems will be available to operators that describe the logic of the software as well as the relationship between the equipment and the control system.

Annual Certification of SOPs
The Safety Manager or designee will annually certify that the operating procedures are current and accurate.

Employee Training in SOPs
SOPs will describe how process operators and workers will be trained to handle upset conditions, as well as what operating personnel are to do in emergencies, such as when a pump seal fails or a pipeline ruptures. Communication between operating personnel and workers performing work within the process area for routine and non-routine tasks will be maintained. The hazards of the tasks will be conveyed to operating personnel in accordance with established procedures and to those performing the actual tasks.

SOP Instructions for Foreign Language Workers
Instructions on SOPs will be prepared in a second language for workers not fluent in English so that procedures will be understood by the workers.

See the ***Training*** section of this SOP for more information about employee training requirements.

SOP Documentation
SOPs will be readily available for rapid reference. At least one copy of all operating procedures will be available to employees who work in or maintain a process.

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PRE-START-UP SAFETY REVIEW

29 CFR 1910.119(i)

Any new chemicals or processes introduced at the Authority will go through a thorough review process before implementation, conducted by a team of persons with design and process safety expertise. The review process will cover each of the program elements described in this SOP.

Review Criteria

Pre-start-up safety reviews will be conducted to ensure:

- New or modified facilities and equipment are built and installed in accordance with design requirements.
- All process procedures and related process operator training are adequate and completed before the introduction of hazardous materials into the process.
- Adequate safety reviews are conducted.
- All PHA safety recommendations are complete before start-up.

Review Process

The review team will conduct a physical examination of the plant, process, or equipment that is new, modified, or that has been shut down for safety reasons. The physical examination will verify that the plant or process was built according to design and that all necessary safety features are included and functioning. The examination must include interviews with key personnel and reviews of documentation, such as specifications and drawings, to verify that the design criteria are met.

Pre-start-up safety reviews will also be conducted as part of Management of Change procedures after a process has been modified or shut down for process safety-related reasons.

Review Documentation

Safety review information will be documented by checklists and formal readiness review plans for initial start-ups or following a safety related shutdown. This documentation, with the appropriate approvals, will be maintained on file to indicate the equipment was constructed according to the design specifications and was properly installed and tested. Other documents, such as training records and procedure sign-offs, must also be available.

See the attached *Pre-Start-Up Safety Review Checklist* for more information.

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MECHANICAL INTEGRITY PROGRAM
29 CFR 1910.119(j)

Equipment used to process, store, or handle highly hazardous chemicals will be designed, constructed, installed, and maintained to minimize the risk of releases of such chemicals. A mechanical integrity program will be put in place to ensure the continued integrity of process equipment.

The written mechanical integrity program will include:
- Identification and categorization of equipment, instrumentation, inspections, and tests
- Testing and inspection procedures and frequencies
- Written maintenance procedures
- Training of maintenance personnel
- A quality assurance program
- Criteria for acceptable test results
- Documentation of test and inspection results
- Documentation of manufacturer recommendations as to meantime to failure for equipment and instrumentation

See the attached *Mechanical Integrity Checklist* for a list of process equipment and instrumentation for inclusion in the mechanical integrity program.

Mechanical integrity of all process systems will be maintained in the following order of importance:
1. Maintain the process as designed, and keep the chemicals contained.
2. Control the release of chemicals through *[briefly describe your site-specific methods, such as venting to scrubbers or flares, or to surge or overflow tanks designed to receive such chemicals]*.

The mechanical integrity of the following systems will be maintained to control an unwanted release of hazardous chemicals:
[Modify the following list according to control measures at your Authority.]
- Fixed fire protection systems, such as sprinklers, water spray, or deluge systems, and monitor guns, dikes, and designed drainage systems
- Pressure vessels and storage tanks
- Piping systems, including valves
- Relief and vent systems and devices
- Emergency shutdown systems
- Controls, such as monitoring devices, sensors, alarms, and interlocks
- Pumps

Quality Assurance Program
The Safety Manager or designee will establish a quality assurance program to help ensure that the proper materials of construction are used, that fabrication and inspection procedures are proper, that replacement parts and maintenance materials are suitable for the process application in which they will be used, and that installation procedures recognize field installation concerns.

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The quality assurance program will help maintain the primary and secondary lines of defense that have been designed into the process to prevent unwanted chemical releases or those that control or mitigate a release. The Safety Manager or designee will review maintenance programs and schedules to ensure there are no areas where "breakdown" maintenance is used rather than an ongoing mechanical integrity program.

Inspection Program

Equipment Installations

Equipment installation jobs will be properly inspected by qualified personnel in the field for use of proper materials and procedures and to ensure that qualified craftsmen are used to do the job. The use of appropriate gaskets, packing, bolts, valves, lubricants, and welding rods will be verified in the field. Inspectors will verify procedures for installation of safety devices, such as the torque on the bolts on ruptured disc installations, uniform torque on flange bolts, and proper installation of pump seals. If the quality of parts is a problem, inspectors will conduct audits of the equipment supplier's facilities to better ensure proper purchases of required equipment that is suitable for its intended service. Any changes in equipment that may become necessary will go through the management of change procedures.

Storage Areas

Monthly inspections will be made by qualified personnel of each storage Authority to ensure that all storage containers are in compliance with DOT, EPA, and OSHA standards. The inspection procedures will incorporate hazard recognition, container integrity, and material leakages.

Frequency of Inspections

The frequency of inspections, testing, and replacement will be consistent with accepted standards, codes, and manufacturer recommendations.

Employee Training

Maintenance and inspection personnel will be trained and qualified to understand and follow the preventive maintenance program procedures, safe practices, and the proper use and application of special equipment or unique tools that may be required to ensure the mechanical integrity of all equipment and processes.

Documentation

Written procedures are required for maintenance operations, including the inspection, testing, maintenance, and repair of process equipment. Inspections and tests must be documented and must include the date, the name of the person performing the inspection or test, identification of the equipment examined or tested, the nature of the test or inspection, and results. A system must be in place to track, address, and close out deficiencies identified during inspection and testing. Routine maintenance activities should also be documented.

Quality Assurance Documentation

"As built" drawings, together with certifications of coded vessels and other equipment, and materials of construction, will be verified and retained with the quality assurance documentation.

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Inspection Documentation

All inspections will be documented and filed with this Plan. Documentation will include:

- The date of the inspection
- Name of the person performing the inspection
- A description of the inspection
- Any deficiencies noted

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HOT WORK PERMIT PROGRAM
29 CFR 1910.119(k)

Hot work operations on or near a process covered by this SOP will be permitted only when a written hot work permit has been issued for the operation. Hot work permits will be required for the following activities:

- Welding, cutting, and other spark- or heat-producing operations on or near a process covered by this SOP and in a location away from a safe area designated for routine welding and cutting operations
- Non-routine hot work in confined spaces, related to lockout/tagout, and other operations when the work pertains to a process covered by this SOP

Permit Authorization
Only designees authorized by the Safety Manager may issue hot work permits. Based on local conditions, the Safety Manager or designee will determine the length of the period for which the hot work permit is valid. Permits must be kept on file until the work is completed.

Permit Content
The hot work permit will include a procedure that describes the steps the maintenance supervisor, contractor representative or other person must follow to obtain the necessary clearance to get the job started. The work authorization procedures will reference and coordinate, as applicable, lockout/tagout procedures, line-breaking procedures, confined space entry procedures, and hot work authorizations. This procedure will also include steps to follow once the job is completed. Hot work permits must document compliance with the fire prevention and protection requirements.

The hazards identified involving the hot work that is to be accomplished will be communicated to those doing the work and to operating personnel whose work could affect the safety of the process.

Specifically, a hot work permit must:

- Include the date authorized for hot work.
- Include the object on which the hot work is to be performed.
- Identify openings, cracks, and holes where sparks may drop to combustible materials below.
- Describe fire extinguishers required to handle fires that are of an incipient type.
- Assign fire watchers for locations where more than a minor fire could potentially develop.
- Describe precautions associated with combustible materials on floors, walls, partitions, ceilings, or roofs of combustible construction.
- Prohibit welding or cutting in unauthorized areas, in buildings with sprinkler systems while such protection is impaired, in explosive atmospheres, and in storage areas for large quantities of readily ignitable materials.
- Require relocation of combustibles where practicable and cover with flame proofed covers where not practicable.
- Identify for shutdown any ducts or conveyor systems that may convey sparks to distant combustibles.

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Hot Work Permit Form
A copy of the standard *Hot Work Permit* form is attached to this SOP. A copy of the form may be modified to include additional controls for special or site-specific activities not normally covered under the standard hot work permit.

Posting the Permit
A signed and dated copy of the hot work permit must be posted by the Safety Manager or designee at the entrance to the area where hot work operations are conducted under the permit. Only the Safety Manager or designee may remove a permit.

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MANAGEMENT OF CHANGE
29 CFR 1910.119(l)

Any operation outside of normal operating parameters (e.g., pressure limits, temperature ranges, and flow rates), changes in process technology, and changes to equipment and instrumentation will require review and approval by the Safety Manager or designee. All proposed changes will require a written management of change procedure.

The written change procedures will address:
- The technical basis for the proposed change
- Impact of the change on employee safety and health
- Modifications to operating procedures
- Necessary time period for the change
- Authorization requirements for the proposed change

Operating personnel will be oriented to the changes in procedures before the change is made. When the process is shut down in order to make a change, the operating procedures will be updated before start-up of the process.

Management of Change Form
See the attached *Management of Change Form* for more information about written change procedures.

Authorization for Process Change
No change will be implemented without the proper authorization of the Safety Manager or designee. The official signer of the change notice will be responsible for verifying that the change has been adequately implemented. The Safety Manager or designee will coordinate and integrate all management of change actions with current operating procedures.

Notification of Process Change
All personnel who work with or have access to covered processes will be informed about any modifications to the operating procedures and when and how long the change will take.

Types of Process Changes
The following types of process changes will require approval and authorization through a written management of change procedure:
- Chemicals
- Process technology, such as raw materials, process chemistry, process control systems, equipment design, and piping and equipment specifications
- Process equipment or piping, including additions or removal
- Process parameters
- Utilities
- Procedures
- Facilities
- Personnel changes

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Chemical. Changes in the type, use, or mixture of chemicals in a process will require a written management of change procedure.

Process technology. Following is a list of technical and mechanical process technologies that will require a written management of change procedure when changes are proposed:
[Modify the following list as applicable to your operations.]

- Production rates
- Raw materials
- Experimentation
- Equipment unavailability
- New equipment
- New product development
- Catalyst
- Operating conditions that improve yield or quality

Equipment and piping. Following is a list of technical and mechanical equipment that will require a written management of change procedure when changes are proposed:

- Materials of construction
- Equipment specifications
- Piping prearrangements
- Experimental equipment
- Computer program revisions
- Alarms and interlocks

Facilities. Changes in the design, use, or configuration of the Authority where a process or part of a process is located will require a written management of change procedure.

Personnel. OSHA considers personnel changes to be inferred in short-term facilities.

Permanent and Temporary Changes
Both permanent and temporary process and equipment changes are subject to the management of change procedures of this SOP.

All temporary changes to equipment and processes will be returned to their original or designed conditions at the end of the change procedure. Time limits will be established in written change procedures to ensure that temporary changes do not become permanent.

Training
Employees who operate a process, conduct maintenance, and contract employees whose job tasks will be affected by a change in the process must be informed of, and trained in, the change before start-up of the process or start-up of the affected part of the process, including the interdependencies and interrelationships among Authority functions, processes, and activities.

Documentation
The Safety Manager or designee will justify and document any minor or typical change that affects the process on the *Management of Change Form.* The documentation will verify whether

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process changes will have an impact on occupational safety and health.

Copies of the written change procedures for permanent and temporary changes will be provided to PHA personnel, and original versions will be kept *[insert location, or specify the computer system if electronic]*.

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INCIDENT INVESTIGATION

29 CFR 1910.119(m)

The Safety Manager or designee will investigate and prepare a written report of each incident involving a process that resulted in or could reasonably have resulted in a catastrophic release of a process chemical. Some of the events are sometimes referred to as near misses, meaning that no property was damaged and no personal injury sustained, but given a slight shift in time or position, damage and/or injury easily could have occurred.

An investigation will be initiated as promptly as possible, but not later than 48 hours following the incident.

An incident investigation team will be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.

Incident Investigation Procedures

The Safety Manager or designee will establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions will be documented.

[Insert applicable procedures from the sample Accident Investigation Plan.]

Investigation Report

A report will be prepared at the conclusion of the investigation and include:

- Date of incident
- Date investigation began
- Description of the incident
- Factors contributing to the incident
- Recommendations resulting from the investigation

The written report will be reviewed with all affected personnel whose job tasks are relevant to the incident findings, including contract employees where applicable.

Report Documentation

Incident investigation reports will be retained for 5 years.

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EMERGENCY PLANNING AND RESPONSE

29 CFR 1910.119(n)

The Safety Manager or designee will plan and implement a written emergency response program to mitigate the consequences of catastrophic chemical releases. Program plans will specify evacuation routes, safe zones, alarms, incident reporting, actions an employee should take to stop releases, and preplanning for incidental releases. In addition, the Safety Manager or designee will develop a written emergency action plan (EAP) in compliance with federal or state workplace emergency action rules.

*[Insert your selection of emergency planning and response provisions here, or cross-reference to a separate emergency plan document. See the sample **Emergency Action Plan** and **HAZWOPER** plans at Safety.BLR.com for more information.*

Following are several emergency handling options to consider when designing your program:

- *If certain employees are trained and equipped to handle and stop small or minor incidental releases, activate an EAP with specific procedures for the handling and cleanup of small spills from the emergency response component of the HAZWOPER plan.*
- *If certain employees are trained and equipped to handle a significant release or event, activate the emergency response component of the HAZWOPER plan.*
- *If you evacuate employees from the danger area and promptly escape to a preplanned safe zone area and allow emergency response organizations to handle the release, activate an EAP.]*

EAP

Authority and contractor personnel will be provided with a clear plan of action in the event of an emergency. The EAP covers the actions and procedures that Authority personnel will follow when responding to an emergency.

[Refer to an external EAP or modify the following EAP-related subsections in this Plan.]

Reporting an Emergency

The types of emergencies to be reported by Authority personnel are:

- Medical
- Fire
- Chemical spill
- Extended power loss
- Breakdown of critical operating equipment
- *[insert others, e.g., terrorist attack or suspected sabotage]*

Evacuation Routes

Assembly areas are posted in the Emergency Action Plan binder each work.

- Emergency exits from each Authority building are clearly marked.
- Primary and alternative assembly areas are listed in AlexRenew's EAP under Fire, Explosion, and Bio/Chemical Treat
- Employees are trained on use and locations of fire extinguishers
- Employees are trained on use and locations fire alarm pull station locations
- Employee assembly areas

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All employees will be trained concerning the evacuation plan for their work areas.

Evacuation Procedures

Supervisors of areas will ensure the safe evacuation of personnel with special needs or disabilities.

After personnel are evacuated and have reached the assembly areas, the senior person will conduct a thorough head count of all personnel. The name(s) of any missing persons and suspected locations for unaccounted or injured people will be immediately communicated to Shift Leader/ Incident Commander.

Medical Emergency

First Aid **for Methanol**

Inhalation:	Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.
Eye Contact:	Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.
Skin Contact:	Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately.
Ingestion:	Get medical attention immediately.

After first aid, get appropriate medical support.

Employees must follow the procedure below during a medical emergency:

1. Call 9-911. Give the dispatcher the following information:

    a. Your name
    b. Nature of injury/illness
    c. Plant name: Alexandria Renew Enterprises
    d. Plant address: 1500 Eisenhower Ave.

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e. Location: Building letter or number you are in or near.
f. Telephone number: 549-3382 plus the extension you are at.

2. Stay on the phone until directed by the dispatcher to hang up.
3. Contact the Shift Leader and advise him of the situation.
4. The Shift Leader shall have someone meet the responding emergency personnel at both Payne Street and Eisenhower Avenue to direct them to the scene.
5. The Shift Leader shall provide a copy of the MSDS to the responding emergency medical personnel if the injury involved a chemical.
6. Contact the Safety Manager as soon as possible.

Note: Automated External Defibrillators are located in:

- Building A; across the hall from the Planner/Scheduler' s office
- Building C; next to the Fire Alarm Panel
- Building J; next to the Lunch Room.
- Building G-1; in the Control Room
- Building L; in the Control Room

The defibrillators are only to be used by trained personnel. See Appendix for Names of Trained Staff

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See the attached *Emergency Services Personnel Contact Information* sheet for information about personnel trained in cardiopulmonary resuscitation (CPR) and first aid.

Fire Emergency
Following are the procedures for responding to a fire at the Authority:

Building M Emergency Response
CAUTION: For Trained Personnel Only
Foam Fire Suppression System

Below are instructions to be followed in the event the foam fire suppression system activates in Building M - Methanol Building.

During the Emergency

- Call 9-911 (if they are not already on the plant site) They may have been called by our fire alarm monitoring company (Simplex)
- The Shift Leader shall post guards to stop traffic from traveling on the Main Hall Road past Building M.
- The Shift Leader will notify all AlexRenew staff as to the situation by the quickest means possible. Use Lulu, Jamie or the Building L Operator to assist with calls.
- All AlexRenew staff will stay away form Building M until the fire department has declared it safe.
- Assist the Fire Department as requested.

CAUTION

The Foam Concentration ball valve must be closed first to prevent damage to the system.

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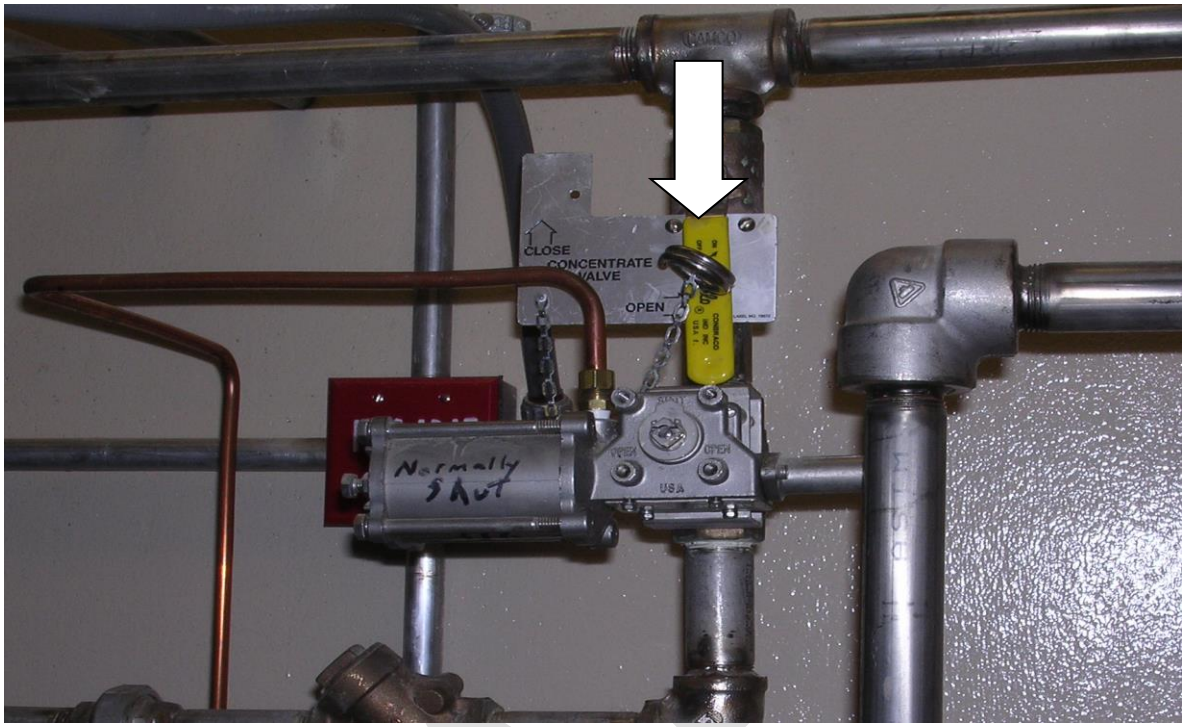

Explain to the fire department that if the gate valve supplying sprinkler water to the system is closed before the foam concentration valve, the bladder may be damaged. This may place the system out of service for an extended length of time. The foam concentration valve is just above

The automatic or hydraulic valve and is identified as the Concentrate Valve. See picture above
Exception: One of the supply gate valves to one of the chemical storage tanks may be closed before the foam concentrate valve as long as the other chemical storage tank valve remains open. See picture below.

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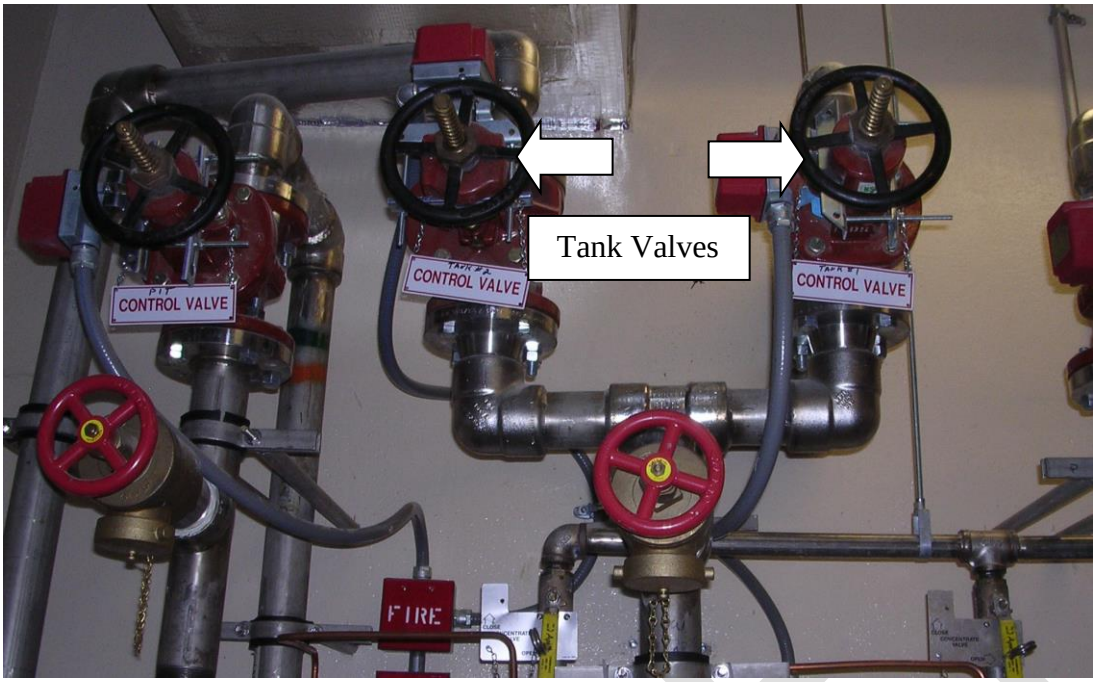

Recovery (After the emergency situation has ended)

The foam system must be recharged as quickly as possible. Do not write a work order. Maintenance does not have the tools or training to perform this task.
The BNR/UV Team or Shift Leader in his absence shall follow the instructions below. You must act quickly.

- Foam is stored in Access Building 5. Check the quantity of foam on hand. There should be 330 gallons stored in 6-55 gallon drums.
- There is a replacement bladder for the foam storage tank in the Warehouse if needed
- Contact Vector Fire Technology Inc.
    - Phone numbers
        - (610) 466-1717 Primary
        - (610) 662-3055 Fay Purvis
        - (484) 432-3859 Steve Kiernan
- Continue to make the calls until you actually talk with someone. Leave a message at each phone where you receive a recording.
- Explain the situation to the person you talk with at Vector Fire Technology.
- Tell the person how much replacement foam is on hand in Access Building 5.
- Ask them when we can expect them at AlexRenew to recharge the system.

- Contact the BNR/UV Team Leader, the Director of the Clean Water Division and the Safety Manager to inform them of the situation and what actions have been taken.
- Complete an Incident Record and Resolution Report. Copy everyone listed on the form with a copy to the Team Leader of the BNR/UV Team as well.

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Arrangements have been made with Vector Fire Technology for them to perform the work as quickly as possible (within 24 hours of the incident). Payment for the work will be arranged after the work has been performed. This is to speed the recharging of the system eliminating the time too process purchase orders in advance.

Nonemergency personnel may fight the fire ONLY if both of the following conditions apply:

- The fire is small (e.g., trash can) and is not spreading to other areas; *and*
- The fire extinguisher is in working condition and personnel are trained to use it.

Upon being notified about the fire emergency, occupants must:

- Leave the building using the designated escape routes.
- Assemble in the designated area on the *[name of the Authority's evacuation route plan]*.
- Remain at the designated area until the emergency coordinator has announced that it is safe to reenter.

Power Outage

In the event of an extended power outage, the following precautionary measures will be taken:
[List precautionary measures appropriate to your Authority's electrical systems and equipment, such as:
Check generators and backup power systems to ensure that electrical power is switched to support critical systems.
Turn off all noncritical electrical systems and equipment.
Drain systems and equipment pressurized with water in areas exposed to prolonged freezing temperatures, or move them to heated areas if feasible.]

Restoration of power. Upon restoration of power, the following measures will be taken:
[List procedures to follow after restoration of power, such as:
Ensure that generators and other backup systems are switched so that power is not fed back into the regular power system.
Examine insulation systems for piping, vessels, and tanks.
Examine electrical motors and drives.
Check valve positions for all pressurized systems and equipment.
Examine all electrical equipment and wiring systems.
Make sure all warning systems are operational.
Check the integrity of all fire detection and suppression systems.
Ensure that all alarm systems are operational.]

Hazardous Chemical Spill

The following are the locations of information and equipment for responding to a chemical spill:
Spill containment equipment:

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Large Spill

The following procedure must be followed by all employees when a large spill that involves of Methanol has occurred:

[Modify the list to include all site-specific procedures for responding to a large spill at your Authority.]

1. Immediately notify *[insert contact name]*.
2. Contain the spill with available equipment (e.g., pads, booms, and absorbent).
3. Secure the area and alert other site personnel.
4. Do not attempt to clean the spill unless trained to do so.
5. Attend to injured personnel and call the medical emergency number, if required.
6. Evacuate the building as necessary.

Small Spill

The following procedure will be followed by all employees when a small chemical spill less than *[insert maximum quantity]* has occurred:

1. Notify *[insert name, such as the Emergency Coordinator and/or supervisor]*.
2. If toxic fumes are present, secure the area (with caution tape or cones) to prevent other personnel from entering.
3. Deal with the spill in accordance with the instructions described in the MSDS.
4. Small spills must be handled in a safe manner while wearing the proper PPE.
5. Review the general spill cleanup procedures.

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COMPLIANCE AUDIT
29 CFR 1910.119(o)

The Safety Manager or designee will conduct a compliance audit every 3 years of all processes, equipment, and areas involving the use, processing, and storage of highly hazardous chemicals.

The audit will include an evaluation of the design and effectiveness of the process safety management system, and a field inspection of the safety and health conditions and practices to verify that the PSM systems are effectively implemented.

The audit will be conducted by or lead by a person knowledgeable in audit techniques and impartial toward the Authority or area being audited. Such person(s) conducting the audit will develop a report of the findings of the audit.

Audit Team
A person authorized and trained in audit procedures will have the knowledge and training of, and the experience and familiarity with, the processes under review or have access to one or more personnel who are familiar with such processes.

For complex processes, the authorized and trained person(s) will have expertise in process engineering and design, process chemistry, instrumentation and computer controls, electrical hazards and classifications, safety and health disciplines, maintenance, emergency preparedness, warehousing or shipping, and process safety auditing.

Audit Team Responsibilities
The audit team will review all aspects of the employee training program as part of the overall audit. The team will review the written training program for adequacy of content, frequency of training, effectiveness of training in terms of its goals and objectives, and how well the training meets the regulatory requirements for PSM and documentation.

Audit Procedures
Audit team members will:
- Review process safety documentation and other paperwork carefully.
- Interview employees at all levels involved with the process.
- Inspect the facilities in which operations are conducted.
- Identify corrective actions.
- Document areas that require corrective action, as well as those areas where the PSM system is effective and working in an effective manner.

Evaluation and Corrective Action
The Safety Manager or designee will evaluate the audit findings and, from the evaluation, determine what actions are appropriate, and establish priorities, timetables, resource allocations, requirements, and responsibilities. In some cases, corrective action may involve a simple change in procedure or minor maintenance effort to remedy the concern. Management of change procedures will be used, as appropriate, even for what may seem to be a minor change.

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After the evaluation, the Safety Manager or designee will determine and document an appropriate response to each of the findings of the compliance audit.

Compliance audit checklist. The compliance audit checklist will be used to identify those elements that will require evaluation or a response to correct deficiencies. The checklist may also be used to develop the follow-up and documentation requirements.

See the attached *Compliance Audit Checklist* form for more information.

Follow-Up and Tracking System
The Safety Manager or designee will track and document whether deficiencies have been corrected. Process operators or managers must follow through and make those corrections.

In order to control the corrective action process, the Safety Manager or designee will use a tracking system. Such system may include periodic status reports shared with affected levels of management, specific reports (such as completion of an engineering study), and a final implementation report to provide closure for audit findings that have been through management of change, if appropriate, and then shared with affected employees and management. The tracking system will provide management with the status of the corrective action. It also provides the documentation required to verify that appropriate corrective actions were taken on deficiencies identified in the audit.

Audit Documentation
The Safety Manager or designee will ensure that there will be a compliance audit of processes involving highly hazardous chemicals at least every 3 years, and certify in writing that the PSM procedures and practices are adequate and are being followed.

The audit document will be updated periodically to indicate the completion of corrective actions.

The two most recent compliance audit reports will be kept on file.

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TRADE SECRETS
29 CFR 1910.119(p)

The Safety Manager or designee will ensure that all information necessary to comply with PSM, without regard to the possible trade secret status of such information, will be submitted to persons responsible for compiling the process safety information, developing the PHA, developing the operating procedures, and performing incident investigations, emergency planning and response, and compliance audits.

Confidentiality Agreements
All persons who receive information for the purpose of PSM that includes trade secrets will enter into confidentiality agreements not to disclose the information.

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TRAINING
29 CFR 1910.119(g)

The Safety Manager or designees will train all employees involved in operating and maintaining chemical processes, including supervisors, managers, and temporary or intermittent workers. The overall goal of employee training is to prevent serious chemical accidents that may cause injury to employees and impact public health and the environment. All employees, including contract employees, involved in operating any process or activity involving a highly hazardous chemical will be trained to recognize and control their exposure to chemical hazards, and trained in the process operating procedures before beginning work with such a process or activity.

Any new personnel assigned to any area of the Authority and all supervisors will receive training in accordance with OSHA, EPA, and DOT regulations. Training will be conducted before any work orders are begun.

Training materials. Copies of specific training modules and learning goals and objectives for employees and other training documentation is available *[insert location or person to contact]*. The learning goals or objectives will be written in clear, measurable terms before the training begins. These goals and objectives will be tailored to each of the specific training modules or segments.

Training Program Elements
All employees involved in a process will be trained to:
- Access and interpret the PSM SOP and procedures.
- Follow the steps for each process operating phase.
- Recognize operating limits.
- Recognize safety and health hazards of the process.
- Follow safe work practices applicable to his or her job tasks.
- Participate safely in routine and non-routine work authorization activities.
- Properly use and maintain equipment.
- Respond to an emergency or evacuation, including a shutdown.

Initial training for new process operators or operators new to a process will emphasize:
[Modify this list as applicable to your Authority.]
- Hazard recognition
- Safe work practices, including start-up, normal operations, and temporary operation procedures
- Hazardous chemicals and specific safety and health hazards and precautions for preventing exposure
- Emergency procedures, including shutdown and start-up procedures
- SOPs and Job Hazard Analyses (JHAs)
- Accidents and near misses
- Operating limits, the consequences of deviations, and the steps required to avoid deviations
- Equipment and process parameters, such as pressure, flow, and temperature
- Chemical handling and safety

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- Cylinder handling and safety
- Hazardous waste
- Small spill response

Training for process maintenance activities. Employees maintaining process equipment will receive training in the process and its hazards.

Training for management of change. Employees whose job duties will be affected by a process change will be trained in those changes and understand the effects of the changes on their job tasks before start-up of the new process. Any minor changes to the Authority operations that occur after initial start-up will be covered in safety meetings.

Chemical exposure training. Chemical exposure training will be conducted in compliance with hazard communication, or worker right-to-know, regulations.

Trainer Qualifications
The person conducting the training will be knowledgeable in the subject matter covered by the elements contained in the training program and as it relates specifically to the workplace that the training will address.

Training Delivery Method and Format
Trainers may use hands-on demonstration, classroom, and any other method of training that leads to comprehension and understanding of the topic. There will be an opportunity for interactive questions and answers with the person conducting the training session.
If there is a language barrier, every effort will be made to use the language known to the trainees to reinforce the training messages and information.

Refresher Training
Refresher training in the operating procedures of a process will be provided to all affected employees at least once every 3 years, and more often when:
- There are significant changes to the process, equipment, or configuration of the Authority.
- An employee or employees demonstrate inadequate knowledge or skill to safely perform job tasks.

The following elements will be emphasized in refresher training:
- Current operating procedures of the process
- Impacts of recent or planned process and equipment changes
- Changes in equipment and process parameters, such as pressure, flow, and temperature
- Process accidents, incidents, or near misses

Training Program Evaluation
Measures of training effectiveness will be performance based (observed behavior), or by written or oral test. If, after the evaluation, it appears that the trained employees are not at the level of knowledge and skill that was expected, the Safety Manager or designee will revise the training program, provide retraining, or provide more frequent refresher training sessions until the deficiency is resolved. Those who conducted the training and those who received the training

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will be consulted as to how best to improve the training process.

Training programs will be evaluated for content and effectiveness every *[insert time interval]*.

Documentation and Recordkeeping

The Safety Manager or designee will maintain initial and refresher training records for all Authority employees that document:

- Who attended
- When each training session was held
- What was covered
- The method used to verify successful completion and understanding of the training.
- Who gave the training and the trainer's qualifications

Contractors and subcontractors will document that contract employees have received and understood the required training.

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CONTRACTORS
29 CFR 1910.119(h)

*[Copy and paste relevant content from the sample **Contractor Safety Plan** to supplement or modify the contractor information provided below.]*
Contractors may be authorized by the Safety Manager or designee to perform safety-sensitive work in and near a process involving a highly hazardous chemical, such as maintenance, repair, turnaround, or major renovation. This contractor element of the SOP addresses the screening process used to select contractors and defines the responsibilities of both the Safety Manager and the contractor in ensuring that all employees accomplish their work safely.

Contractor Evaluation
Before awarding a contract, the Safety Manager or designated personnel will screen and evaluate the job skills, methods, safety performance, certifications, and safety programs of any contractors being considered for maintenance, repair, turnaround, major renovation, or specialty work on or around a process covered under this SOP. The attached *Contractor Safety and Health Questionnaire* form or equivalent will be used to conduct the contractor evaluation.

Contractor Information and Records
When a contractor is hired, the Safety Manager or designee will provide the contractor with information on the hazards of the process the contractor will work on. To further ensure contractor safety, the Safety Manager or designee will:

- Before work begins, inform contractors of the potential fire, explosion, and toxic release hazards related to the contractor's work and describe the process.
- Provide for access by the contractor's employee to PHAs and PSI for the processes where they are working.
- Prevent contractor employees from entering any area that is not authorized for the work required.
- Provide the contractor with the SOPs for the process with which they are involved.
- Provide relevant information from the Authority's emergency action plans so that the contractor's employees know what to do in an emergency.
- Ensure that contractors provide the Safety Manager or designee with access to the contractor's injury or illness records related to their work in process areas.
- Periodically evaluate the contractor's performance to ensure the contractor is living up to their safety obligations under the Contractor Agreement.
- Conduct periodic evaluations of contractor worker performance and training and ensure compliance with applicable PSM and other safety requirements.
- Verify that each contractor worker is trained in the work necessary to perform the job safely.
- Establish a work authorization or permit system to control contractor access to process areas and ensure that Authority workers are aware of contractor operations that may have an impact on covered processes.

Contractor Responsibilities
The contractor will:

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- Document that the contractor's employees understand potential job-related hazards, are trained to work safely, and follow the safety rules of the Authority and operations in which they are working.
- Ensure that each of its workers follows the safe operating procedures of the Authority, including the safe work practices.
- Maintain accurate and up-to-date injury and illness records and make them available to the Safety Manager or designee on request.
- Submit monthly safety reports with monthly and cumulative accident statistics.
- Submit written reports to the Safety Manager or designee of all events resulting in or having the potential for injury, damage, or loss, with immediate notification to the site contact responsible for supervision of the contractor.
- Comply with the hot work permit system and all other work authorization systems.
- Train each worker in the potential fire, explosion, or toxic release hazards related to the job and the process, and the applicable provisions of the emergency action plan.
- Document worker training with records that identify the employee and date of training, and include a means to verify successful completion.
- Advise the Safety Manager or designee of any unique hazards presented by their work, or of any hazards found in the course of their work.

See the attached *Contractor Safety and Health Agreement* for a copy of the contractor agreement.

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ATTACHMENTS

[The following forms are available at Safety.BLR.com to supplement your EHS Plan.]

Block Flow Diagram
Process Flow Diagram
Chemical Inventory
Employee Participation Plan
Contractor Safety and Health Questionnaire
Contractor Safety and Health Agreement
MSDS
Mechanical Integrity Checklist
Hot Work Permit
Management of Change Form
Emergency Services Personnel Contact Information
Compliance Audit Checklist
Standard Operating Procedures
Pre-Start-Up Safety Review Checklist
PHA Team Member Qualifications
PSI Compilation Checklist

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Fall Protection

Aerial lifts Training

Alexandria **Renew Enterprises**

SAFETY MANUAL

Electrical Safety

Confined Space Entry

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Introduction

Alexandria Renew Enterprises staff shall conduct safe operations in accordance with the procedures outlined in this Standard Operating Procedure (SOP).

The objective of the Safety SOP is to provide operational instructions that will ensure a safe place for all employees to work. All personnel should be guided in carrying out their daily activities and responsibilities by the procedures outlined in this SOP.

The Safety SOP is to be used by all AlexRenew personnel when performing their assigned duties. This SOP shall be updated as necessary and reviewed on an annual basis by the Safety Coordinator. This Safety SOP supersedes all previous AlexRenew booklets, pamphlets, papers, and other safety references not found in or made part of this SOP.

The Safety SOP is divided into four (4) sections. These sections are as follows:

Section I: Administration

Section I explains the Safety Administration. Procedures to properly write and document a report such as accident, unsafe work, or inspections are discussed. Specific duties and responsibilities of AlexRenew staff are found in this section. Safety rules and specifications for safety equipment are also covered in this section.

Section II: Safe Work Practices (SWP)

Section II contains safe work practices required for different work assignments. This section should be used as a reference to make sure that all procedures used are considered safe.

Section III: Safety Programs

Section III contains safety programs that are followed throughout AlexRenew Enterprises.

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Section IV: Safety Training Guides

This section is maintained in the Safety Coordinators Office.

Section IV contains training guides that may be used to conduct safety training.

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SECTION I
ADMINSTRAION

Safety Organization / Responsibilities

The number one goal of AlexRenew Enterprises is to ensure that all operations are conducted in a safe manner to reduce or eliminate accidents, personal injuries, and property damage to the fullest extent. To meet this goal, the AlexRenew safety organization has been established.

1. The AlexRenew Management Safety Committee

   The AlexRenew Management Safety Committee consists of all Managers for the purpose of making safety policy for the AlexRenew Enterprises. The Management Safety Committee's duties include:
   a. Setting safety priorities.
   b. Insuring the development of safety programs and rules.
   c. Approving safe work practices.
   d. insuring that uniform safety programs are implemented AlexRenew wide wherever possible.

2. Managers

   Managers are responsible for implementing and coordinating AlexRenew Safety Program. Manager responsibilities include:
   a. Represent their Department on the AlexRenew Management Safety Committee.
   b. Set Department safety priorities.
   c. Review and approve department safety rules, practices and programs.
   d. Ensure safety rules, practices and programs are applied uniformly throughout the department.
   e. Assign department personnel special duties related to safety programs as required.
   f. Set and monitor the progress of safety goals for the department.

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3. Safety Coordinator

The Safety Coordinator is involved with all aspects of safety throughout all work areas within the AlexRenew Enterprises. The Safety Coordinator receives direction from the Human Resources Manager. The Safety Coordinator is responsible for:

a. Coordinating and conducting safety related meetings, safety training Sessions, safety inspections and accident investigations.
b. Writing, coordinating, enforcing and updating all required OSHA programs.
c. Handling SARA Title III processing and emergency response coordination.
d. Developing and distributing Safety Notes and Safety Bulletins.

4. Chief Operator, Supervisors, Shift and Team Leaders

Chief Operator, Supervisors, Shift, and Team Leaders shall be responsible for the overall supervision, enforcement, promotion and publicity of AlexRenew Safety Programs. They are responsible for:

a. Supervising the Safety Program and are accountable for any unsafe activity occurring at or on AlexRenew property.
b. Enforcing all safety program guidelines and discipline for personnel when necessary to ensure compliance.
c. Promoting the Safety Program and the safety attitude among all AlexRenew Staff.
d. Publicizing the Safety Program in the interests of good public relations.
e. Ensuring change sheets are inserted in the Safety SOP and that the Safety SOP is up-to-date.
f. Documenting Safety SOP changes by completing the Change Form/Review Sheet.
g. Ensuring all safety equipment is properly maintained.
h. Ensuring AlexRenew employees receive proper safety training.

6. All AlexRenew Employees

It is the responsibility of every AlexRenew employee to ensure that the day to day functions of AlexRenew Enterprises are performed in a safe manner. Employees shall be responsible for:

a. Following all AlexRenew Safety Rules and Work Practices.
b. Reporting any unsafe work conditions.
c. Reporting accidents immediately.
d. Following all AlexRenew Safety Programs.
e. Operating all tools and equipment in a safe manner.
f. Maintaining all tools and equipment in a safe manner.
g. Wearing personal protective equipment (PPE) as needed.
h. Asking questions when safety is a concern.

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7. Employee/Supervisor Safety Committee

An Employee-Supervisor Safety Committee shall be responsible for advising and assisting the department's supervisory staff in complying with AlexRenew Safety Program. It is intended that members be volunteers from the following Job Descriptions: Shift Leader, Team Leader of the area inspected, a member of the Engineering Section, an Admin Staff member, two Maintenance or Process Technicians, and one Control Systems Technician.

Any AlexRenew Staff Member that would like to attend the meeting or inspection is welcome to join the committee as often as they wish, with their supervisor's approval.

The Employee/Supervisor Safety Committee shall meet monthly and at any other time when warranted. Minutes of each meeting shall be posted on the Personnel Bulletin Boards and kept on file by the current Secretary and Safety Coordinator.

The Employee-Supervisor Safety Committee's general duties and functions are:

Alert supervisory staff immediately of any unsafe work practices, procedures, equipment or conditions.

a. Recommend changes and improvements in the AlexRenew Safety Program.
b. Provide liaison between supervisory staff and the employees.
c. Promote safety and the Safety Program among all AlexRenew staff.
d. Review accidents and recommend measures to prevent such incidents.
e. Review Unsafe Work Condition Reports and recommend corrective measures.
f. Inspect a portion of AlexRenew Enterprise's property monthly.

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Accident Reporting

Accident Reporting

The AlexRenew Enterprises shall prepare and maintain records for reporting personal injuries, accident investigations and unsafe work conditions.

1. Reporting Personal Injuries:

   It is the employee's responsibility to report all accidents to their supervisor immediately. The supervisor shall ensure that the employer make the call to the AlexRenew Workers Comp Insurance Carriers 24-hour reporting agency.

2. General Guidelines for the employee to report an accident are located in the copy room on the cover sheet of the Accident Report Packet.

   The following general guidelines should be followed in preparing accident investigations:

   a. Accident investigation is a fact-finding activity.
   b. The main objective is to determine "what happened" rather than "who is at fault".
   c. Explanations need to be very frank to determine the real causes of an accident.
   d. The words "unavoidable" and "carelessness" should not be used as explanations.

3. The supervisor shall ensure the employee has been given a Panel of Physicians and has completed the form. The completed form must be forwarded immediately to the Safety Coordinator

4. The Safety Coordinator shall develop AlexRenew annual OSHA 300 (Log and Summary of Occupational Injuries and Illnesses) and ensure it is posted as prescribed by OSHA.

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Follow-up Accident Investigation

Follow-up Accident Investigation

1. A Follow-up Accident Investigation Report shall be prepared by the Safety Coordinator in conjunction with the supervisor as soon as possible after an accident under the following conditions:
   a. Loss of life or limb.
   b. A lost work time injury.
   c. Substantial damage to AlexRenew ’s property
   d. Injury to non-AlexRenew personnel.
   e. Damage to non-AlexRenew property.
   f. Requested by a Manager.
   g. At the Safety Coordinator's discretion.

2. The purpose of a follow-up accident investigation is to provide a view of the accident to ensure individuals are safeguarded from unnecessary danger. This report should provide all the required information in sufficient detail to:
   a. Analyze the cause of the accident and the necessary corrective measures to prevent similar future accidents.
   b. Determine the additional equipment, supervision or training required to improve safety.
   c. Determine the facts bearing on the legal liability connected with the accident.
   d. Publicize the particular hazard(s) to supervisors and employees.

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Safety Inspections

Safety Inspections

The Employee /Supervisory Safety Committee conducts inspections of AlexRenew facilities on a monthly basis or as deemed necessary by the AlexRenew management to provide a safe work place for all AlexRenew staff and visitors.

1. Inspections of AlexRenew facilities should include, but not be limited to the following:
   a. Compliance with all AlexRenew adopted safety programs.
   b. Checking for unsafe tools and equipment.
   c. Checking for unsafe work conditions.

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Safety Rules

Safety Rules

The AlexRenew staff shall follow all required safety rules in the performance of their daily activities when at AlexRenew facilities or representing AlexRenew when off AlexRenew facilities.

Safety rules are written rules describing required practices and procedures to follow for performing routine and non-routine activities in a safe manner.

1. Supervisors are responsible for:

    a. Informing, explaining and publicizing all safety rules to their staff.
    b. Enforcing all safety rules required by AlexRenew staff.
    c. Ensuring appropriate disciplinary action is taken when necessary for serious safety rule violators, including verbal or written warnings, suspensions and dismissal.

2. All AlexRenew personnel are responsible for:

    a. Familiarizing themselves with all safety rules.
    b. Observing all safety rules in the conduct of their activities when at AlexRenew facilities or representing AlexRenew when off AlexRenew facilities.
    c. Reading and abiding by all safety equipment rules listed on the equipment instructions or in the equipment Operations and Maintenance Manual.

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SAFETY STANDARD OPERATING PROCEDURES
ALEXANDRIA RENEW ENTERPRISES

ALEXANDRIA ARENEW ENTERPRISES EMPLOYEES SHALL FAMILIARIZE THEMSELVES WITH AND OBSERVE ALL SAFETY RULES
(This list is not all inclusive)

1. Wear hard hats properly at all times in designated areas. Designated areas are those areas where something may fall from a higher elevation or areas where individuals may walk into something i.e. valve or pipes in the access galleries.

2. Wear safety glasses when chipping, hammering, pounding, cutting grass, using a weed eater and using powered and non-powered tools that could result in flying objects.

3. Wear safety goggles while sandblasting, grinding, handling chemicals, using power hand tools and machine shop tools.

4. Wear approved safety shoes were appropriate.

5. Wear safety harness and lifeline when working in or around an enclosed manhole, pipe, tank or wet well where there is no other adequate protection against falling.

6. Test for a safe atmosphere with gas detection equipment before entering an enclosed manhole, pipe, tank, wet well or any other area subject to an explosive, oxygen deficient or toxic atmosphere.

7. Wear appropriate respiratory protection when, sandblasting, painting or handling chemicals.

8. Immediately protect the opening of a manhole with a Port-a-cover or some other suitable material as soon as a manhole cover is removed.

9. Ventilate, as needed, with portable ventilation blower before entering an enclosed manhole, pipe, tank or wet well.

10. Place barricades around all open access hatches, manholes, pipe trenches and excavations left unattended.

11. Wear appropriate goggles, face mask, and gloves when burning, cutting or welding.

12. Wear hearing protection when required.

13. Wear seat belts when driving AlexRenew vehicles, forklifts, tractors or any other equipment provided with seat belts.

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14. Failure to follow safety rules may lead to disciplinary action up to termination of employment

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Safety Equipment

All AlexRenew staff shall use recommended safety equipment as required and appropriate for their respective task.

1. Manager, Supervisors, Leads and Team Leaders are responsible for:
    a. Providing the appropriate recommended safety equipment, listed in Section 4, in an adequate quantity to protect personnel assigned to them.
    b. Ensuring safety equipment is maintained in accordance with the Preventive Maintenance Schedule for such equipment.
    c. Ensuring adequate training is provided to their staff for the proper use and maintenance of safety equipment.
    d. Ensuring any required tests and/or certifications of the equipment have been performed and/or obtained.
    e. Requiring and ensuring that personnel use safety equipment whenever and wherever appropriate.

2. All AlexRenew staff are responsible for:
    a. Familiarizing themselves with the proper use and maintenance of safety equipment.
    b. Using safety equipment whenever and wherever required and appropriate.
    c. Exerting reasonable judgment when working to protect their personal protective equipment (PPE).
    d. Properly inspecting, cleaning and maintaining safety equipment as required.

3. Records of all safety equipment shall be kept with preventive maintenance records or the equipment's history file that are part of the Preventive Maintenance Schedule. Equipment documentation includes, but is not limited to, the following:
    a. Preventive maintenance
    b. Tests
    c. Calibration
    d. Certifications
    e. Repairs

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4. Recommended safety equipment:

   a. Personal Protective Equipment (PPE):
      (1) Hard Hats
      (2) Safety Shoes
      (3) Rubber Boots
      (4) Rain Gear
      (5) Gloves (various types)
      (6) Safety Glasses
      (7) Safety Goggles
      (8) Hearing Protection

   b. General Equipment:
      (1) Face Shields
      (2) Safety Harnesses and Lifelines
      (3) Personal Floatation Devices, Lifelines, and Shepherd's Hooks
      (4) Explosion Proof Portable Lighting
      (5) Traffic Warning Signs, Flashers, Cones and Barricades

   c. Emergency Equipment:

      (1) Automated Emergency Defibrillators
      (2) First Aid Kit/CPR/Blood Borne Pathogen Kit
      (3) Chemical/petroleum spill kits
      (4) Fire Extinguisher (both dry chemical and carbon dioxide)

   d. Hazardous Atmosphere Equipment:

      (1) Portable Ventilating Blower and Flexible Hose
      (2) Oxygen Deficiency, Combustible Gas, and Hydrogen Sulfide Detection Meter
      (3) Tripod/Winch
      (4) Un-Hoist/Winch
      (5) Miller *Edge* Fall Protection System

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Safety Equipment

Equipment: **Dust Mask**

Required Type: Dust mask shall be of the NIOSH approved type, No. TC-21C-132

Required No.: Dust Mask shall be available as follows:

Appropriate type dust mask shall be available to all **Renew** staff who would require protection during performance of assigned duties.

Use: Personnel shall use dust mask whenever handling chemicals that are not IDLH rated and performing chemical wash activities.

Note: See Safety SOP, Safety Programs: Respirator Protection for information on respirator selection, inspection, maintenance, cleaning, storage and fit-testing.

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Safety Equipment

Equipment: **Explosion Proof Portable Lighting**

Approved Type: Explosion proof portable lighting shall be UL approved.

Required No.: Explosion proof portable lighting shall be provided as needed:

Use: Personnel shall use explosion proof lighting when lighting is required in spaces that contain or may contain combustible gas.

Note: See Safety SOP, Safe Work Practices: Digesters

Note: See Safety SOP, Safety Programs: Confined Space Entry

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Safety Equipment

Equipment: **Face Shields**

Required Type: Face shields shall be ANSI Z87.1 approved type.

Required No.: Face shields shall be provided as follows:

One (1) per workshop.
One (1) per chemical handling area.

Use: Face shields shall be used whenever:

1. Damage to both eyes and face may occur.
2. Using a grinder.
3. Handling chemicals, fuels, or other materials as required by the applicable MSDS sheet.

Note: See Safety SOP, Training: Welding, Cutting and Brazing.

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Safety Equipment

Equipment: **Fire Extinguisher**

Approved Type: Fire extinguishers shall be NFPA approved.

Required No.: Fire extinguishers shall be provided to comply with NFPA and local fire codes.

Use: Fire extinguishers shall be used as follows:

ALWAYS use the correct fire extinguisher for the type of fire involved.

MATERIAL	CLASS OF FIRE	TYPE OF EXTINGUISHER
Wood, paper, etc.	A	All Types
Gasoline, Grease, etc.	B	CO2 or Dry Chemical
Electrical	C	CO2 or Dry Chemical

NEVER USE WATER ON A FIRE INVOLVING ELECTRICAL EQUIPMENT

Note: See Safety SOP, Safe Work Practices: Fire Control and prevention

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Safety Equipment

Equipment: First Aid/CPR/Blood borne Pathogens Kit

Required No.: First Aid kits and CPR/Blood borne Pathogens kit shall be provided at all locations as directed by the Safety Coordinator. Locations are as follows:

First Aid Kit Locations:

(1) Administrative Building - Copy /Mail Room.
(2) Administrative Building - Laboratory Office area.
(3) Building L Operators Control Room.
(4) Building G1 Operators Control Room
(5) All Pump Stations

Use: First Aid kits shall be used as needed.
Required Contents: All First aid kits shall contain the following items. Items that are ordered in boxes with quantities larger than 2 will be restocked as needed when the box is depleted to approximately 25% of its original quantity.

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First Aid Kit and Backup Stock

Item	Northern Safety Item Numbers	Quantity Per Kit	Quantity Stocked in Stockroom	
			Maximum On Hand	Reorder Point
First Aid Guide	31967	1	2	1
Scissors	4408 BE	1 Pair	2	1
Latex Glove	31968	1 Packages – 2 Pair Per Package	4	2
Knuckle Bandage	31951	1 Box of 40	4	2
Fingertip Bandage	31899	1 Box of 30	4	2
Bandage 3/4"x3"	31952	1 Box of 50	4	2
Junior Strips 1"X3"	31954	1 Box of 50	4	2
Large Gauze Pad 3"x3"	31956	1 Box of 4	4	2
Small Gauze Pad 2"x2"	31955	1 Box of 6	4	2
Compress Dressing 4"	31958	1	3	1
Triangular Bandage	31963	1	3	1
Waterproof Adhesive Tape	5050	1 Roll	3	1
CPR Mouth Barrier	31960	1	3	1
Alcohol Wipes	30962	1 Box of 100	3	1
Hydrogen Peroxide 2oz	24778	1 Bottle	3	1
Antiseptic Spray 2oz	24775	1 Bottle	3	1
Burn Spray 2oz	24776	1 Bottle or can	3	1
Burn Gel 1/8 oz	30122	1 Box of 6	3	1
Ice Pack or Hot/Cold Pack	31968	1	3	1
Ammonia Inhalant	31971	1 Box of 10	3	1
Antiseptic Wound Cleaner	31974	1 Box of 10	3	1
Insect Sting Relief Wipes	31964	Box of 10 wipes	3	1
Hydrocortisone .9g	31975	Box of 12	3	1
Red Biohazard Waste Bag	31979	1 Bag	5	2
Cotton Tipped Applicators	28007	Container if 100	3	1

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CPR/Bloodborne Pathogens Kit Locations:

(1) Administrative Building - Copy /Mail Room.
(2) Administrative Building - Laboratory Office area.
(3) Building L Operators Office.
(4) Building G1 hall outside shop.
(5) At each Pump Station.
(6) At each Operations Control Room.
(7) In the Warehouse.

Required Contents: CPR/Bloodborne Pathogens Kits shall contain at least one of each of the following items:

Poly White Box (seal unbroken)
Protection Gown & Cap
Goggle/Mask/Gloves
I.L.S.C. Powder/Scraper/Gloves
Read bio-hazard bag w/ties
2 crepe towelette
2 antiseptic wipes
Disinfectant towelette
Antimicrobial towelette
Mouth to mouth barrier
Scoop bag

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First Aid Kit

Bloodborne Pathogens Kit

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Safety Equipment

Equipment: **Gloves**

Required No.: Gloves shall be provided as follows:

Supervisory staff shall make available a sufficient supply of different types of gloves for employee use during work.

Required Type: Gloves shall be of the type appropriate for the task at hand, i.e. a welding task requires welder's gloves; laboratory work requires approved lab gloves.

Gloves must also be the proper size to fit the employee properly.

Use: Personnel shall wear appropriate gloves when performing the following activities:

1. Burning or welding.
2. Handling chemicals, fuels or other materials as required by the applicable MSDS.
3. Performing laboratory functions requiring hand protection.
4. Replacing UV Lamps.
5. Working with liquid, solid or semi solid wastewater.
6. First aid procedures that involve contact with blood or bodily fluids.

Note: See Safety SOP, Administration: Safety Rules

Note: See Safety SOP, Training: Hand Protection

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Safety Equipment

Equipment: **Hard Hats**

Approved Type: Hard hats conforming to ANSI Z 89.1 Type I Class E & G

Required No.: Hard hats shall be provided as follows:

One (1) per each **Renew** staff member

Use: Hard hats shall be worn when on duty outside of administrative offices, control rooms, lunchrooms, locker rooms, classrooms or going to or from vehicles while arriving on the plant site or departing the plant site.

Note: See Safety SOP, Administration: Safety Rules

Replacement: Hard hats are to be replaced as needed. Replace the hard hat when necessary or after no more than 5 years use.

Note: Replace the suspension after no more than 12 months of use on your birthday month.

Note: Visitors are required to wear hard hats while on the plant site or at pump stations when outside of administrative offices, control rooms, lunchrooms, locker rooms, classrooms or going to or from vehicles while arriving on the plant site or departing the plant site.

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Safety Equipment

Equipment: **Hearing Protectors**

Equipment Type: Hearing protectors shall be NIOSH approved with a NRR (Noise Reduction Rating) of at least 25dB.

Required No.: Hearing protectors shall be provided as follows:

One (1) pair per each employee; or
One (1) or two (2) disposable dispenser at each entranceway into designated Hearing Protection Required areas.

Use: Personnel shall wear appropriate hearing protectors when working in high noise areas (90 dBA and above) or in posted noise hazard areas.

Note: See Safety SOP, Safety Programs: Hearing Conservation Program for the maximum noise exposure limits, noise hazard areas and the designation of hearing protection devices.

Note: See Safety SOP, Safe Work Practices: High Noise Areas.

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Safety Equipment

Equipment: **High-Visibility Reflective Clothing**

Approved Type: Must meet the performance standards of Class 3 requirements of the ANSI/ISEA 107–2010 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear"

Required No.: Provided as needed.

Use: All staff within the right-of-way who are either exposed to traffic or to work vehicles and construction equipment shall wear high-visibility safety apparel.

All workers installing, maintaining and removing Temporary Traffic Control devices in nighttime work zones and during emergency situations when traffic control must be installed during low light conditions such as inclement weather (fog, rain, sleet, snow, etc.) shall wear Class E trousers in addition to the standard Performance Class 3 risk requirements of the ANSI/ISEA 107–2010 publication. Nighttime work zones are operations which occur from 30 minutes before sunset until 30 minutes after sunrise.

Note: See Safety SOP, Safety Programs: Flagging

Daytime Work Only

Nighttime Work Also Requires Reflective Pants

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SAFETY STANDARD OPERATING PROCEDURES
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Safety Equipment

Equipment: **Personal Floatation Devices, Lifelines, and Shepherd's Hooks**

Approved Type: Personal Floatation Devices and shall be US Coast Guard or OSHA approved.

Required No.: Personal Floatation Devices and lifelines shall be placed at each set of open tanks or basins.

Use: Personal Floatation Devices, with attached lifelines are to be used in the rescue of anyone that may fall into a tank.

Note: See Safety SOP, Safe Work Practices: Manholes.

Note: See Safety SOP, Safe Work Practices: Aeration Tanks.

Personal Floatation Device

Lifeline in a Bag

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Safety Equipment

Equipment:	**Rain Gear**
Approved Type:	Standard
Required No.:	Rain gear shall be provided as follows: One (1) set for each employee required to work in inclement weather or other conditions where the employee may get wet. One (1) set for each employee required to work around chemicals that are listed on the appropriate MSDS.
Replacement:	Replace as needed.
Use:	Personnel should wear rain gear when work requires exposure to inclement weather or other conditions where an employee may get wet. Note: See Safety SOP, Safe Work Practices: Biosolids Handling Note: See Safety SOP, Safe Work Practices: Ceramic Diffuser Cleaning Note: See Safety SOP, Safe Work Practices: Chemical Handling Note: See Safety SOP, Safe Work Practices: Methanol Note: See Safety SOP, Safe Work Practices: Muriatic Acid

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SAFETY STANDARD OPERATING PROCEDURES
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Safety Equipment

Equipment: **Rubber Boots**

Approved Type: Rubber boots shall be chemical resistant type.

Required No.: Rubber boots shall be provided as follows:

One (1) pair for each employee required to perform work while standing in water, wastewater, sludge, or chemicals.

Replacement: Replace as needed.

Use: Personnel should wear rubber boots when the work requires standing in water, wastewater, sludge or chemicals. Steel-toed rubber boots or rubber boots large enough to fit over safety shoes should be used.

Note: See Safety SOP, Safe Work Practices: Biosolids Handling

Note: See Safety SOP, Safe Work Practices: Ceramic Diffuser Cleaning

Note: See Safety SOP, Safe Work Practices: Chemical Handling

Note: See Safety SOP, Safe Work Practices: Muriatic Acid

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Safety Equipment

Equipment: **Safety Glasses**

Approved Type: Safety glasses conforming to ANSI Z 87.1.

Required No.: Safety glasses shall be provided as follows:

One (1) pair per each affected employee.

Use: Personnel shall wear safety glasses when performing the following activities:

1. Chipping, hammering, pounding or other activities that could create flying debris.
2. Cutting grass, using a weed eater or blower.
3. Handling materials as required by the applicable MSDA sheet.
4. Working on electrical components.

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Safety Equipment

Equipment: **Safety Goggles**

Approved Type: Safety goggles conforming to ANSI Z 87.1.
ONLY chemical splash type goggles are to be used for handling chemicals.

Required No.: Safety goggles shall be provided as follows:

Use: Personnel shall wear goggles when performing the following tasks:

1. Grinding
2. Using powered or pneumatic hand tools.
3. Handling chemicals (**approved chemical goggles only**), fuels or other materials as required by the applicable MSDA sheet
4. Working with lime or lime equipment.
5. Working with sludge or sludge handling equipment

Note: See Safety SOP, Administration: Safety Rules

Note: See Safety SOP, Safe Work Practices: Ceramic Diffuser Cleaning

Note: See Safety SOP, Safe Work Practices: Chemical Handling

Note: See Safety SOP, Safe Work Practices: Ferric Chloride

Note: See Safety SOP, Safe Work Practices: Handling Storage Batteries

Note: See Safety SOP, Safe Work Practices: Methanol

Note: See Safety SOP, Safe Work Practices: Muriatic Acid

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Equipment: **Safety Goggles (Continued)**

Note: See Safety SOP, Safe Work Practices: Sodium Hydroxide

Note: See Safety SOP, Safe Work Practices: Sodium Hypochlorite

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Safety Equipment

Equipment: **Safety Harness and Life Lines**

Approved Type: Safety harnesses of the full body type are approved as follows:

ANSI A10.14 Class I

Note: Body belts are dangerous and not allowed for use by AlexRenew staff.

Lifelines shall be one-half (1/2)-inch diameter nylon rope with 5,000 pound test snap hooks at each end and shall be of the OSHA 29.CFR1926.104 approved type.

Required No.: Safety harnesses shall be provided as needed. See "Use" listed below.

Use: Personnel shall wear a safety harness and life line when working in, around or on an open manhole, pipe, tank, or wet well where there is no other adequate protection against falling or where retrieval of a person would present significant risk to other personnel if entry is made by them.

Note: See Safety SOP, Safety Programs: Confined Space Entry

Note: See Safety SOP, Safety Programs: Scaffolding

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Note: See Safety SOP, Safe Work Practices: Fall Protection

Note: See Safety SOP, Administration: Safety Rule

Note: Lifelines for use on Arial Lifts (Manlifts) are to be 4" or shorter.

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Safety Equipment

Equipment: **Safety Shoes**

Approved Type: Safety shoes conforming to ASTM F2413 - 11 Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear & F 2412, Test Methods for Foot Protection

Required No.: One pair of safety shoes for Administrative staff and Laboratory personnel.
Two (2) pair of safety shoes for everyone else.

Use: All employees are required to wear safety shoes or other protective footwear at all times when working in or visiting areas outside of administrative offices, lunchrooms, locker rooms, classrooms or going to or from vehicles while arriving or departing the plant site. Protective footwear will also be worn in the proceeding areas when there is a danger of foot injuries due to falling or rolling objects.

Purpose
The purpose of this Standing Operating Procedure is to provide guidance for the wearing of appropriate safety footwear to protect the foot from preventable injury or disease while at work. It also provides guidance for replacement of safety footwear that no longer affords proper protection.
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Program Requirements

- Employees shall be responsible for purchasing and wearing appropriate protective footwear or safety shoes that comply with the ASTM International standards ASTM F2413 – 11.
- Safety shoes for laboratory staff must also be slip resistant.
- Safety shoes for electrical and instrumentation staff or anyone else exposed to electrical currents must also be rated for Electrical Hazard.
- Employees are responsible for maintaining their protective footwear in a manner that will provide adequate protection, give good walking support and protect the foot from disease.
- Safety shoes are only purchased from AlexRenew approved vendors.
- New Administrative staff, Laboratory personnel and Interns are eligible to receive an initial shoe allowance of up to one hundred dollars ($100) towards the purchase of safety shoes.
- All other new employees are eligible to receive an initial shoe allowance of up to two hundred dollars ($200) toward the purchase of two (2) pair of safety shoes. The employee must purchase two (2) pair of shoes.
- The Authorization to Purchase Safety Shoes form will be provided to the new hire during their Safety Orientation or prior to their first day of work when possible.
- New hires must purchase/order safety shoes within their first two days of employment.
- Replacement safety shoes will be made at the discretion of the employee's supervisor who will inspect the shoes in question and approve/disapprove the Authorization to Purchase form.
- If the Supervisor is unsure of the shoes serviceability he may confer with the Safety Coordinator.
- When approved the employee will take the Authorization to Purchase Safety Shoes form to the Purchasing Department to exchange for a shoe voucher.
- The Purchasing Department will maintain a listing of two venders at all times that AlexRenew employees can order safety shoes from. One is to be a local safety shoe chain store. With the other accepting online orders.
- The Purchasing Department will maintain, control and issue vouchers.
- Vouchers will be issued to the employee by Purchasing when an Authorization to Purchase Safety Shoe form is present with the Supervisor or Safety Coordinator's signature authorizing the purchase.
- The additional cost of safety shoes selected by an employee above the one hundred dollar subsidized amount will be paid by the employee at the time of purchase/ordering.
- As the new replacement shoes are made available to the employee he/she will surrender the old shoes to the Purchasing Department.

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Safety Equipment

Equipment: **Traffic Warning Signs, Flashers, Cones and Barricades**

Approved Type: Traffic warning signs, flashers, cones and barricades shall be DOT approved.

Required No.: Traffic warning signs, flashers, cones and barricades shall be provided as needed.

Use: Trained personnel shall use traffic warning signs, flashers, cones and barricades to warn of traffic hazards, obstructions, open access hatches, manholes, pipe trenches and excavations left unattended.

Note: See Safety SOP, Safety Programs: Flagging

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Safety Equipment

Equipment:	**Tripod & Winch**
Approved Type:	Tripods and winches shall comply with ANSI standard Z117. All manual powered winches should have manufacturer approval for use as a personal lifting device and a minimum mechanical advantage of 4:1, preferably 5 or 7:1.
Required No.:	Tripods/winches shall be provided as follows: One (2) tripod/winch
Use:	Use tripods/winches for confined space entries and fall protection where practical. Note: See Safety SOP, Safety Programs: Confined Space Entry Program.

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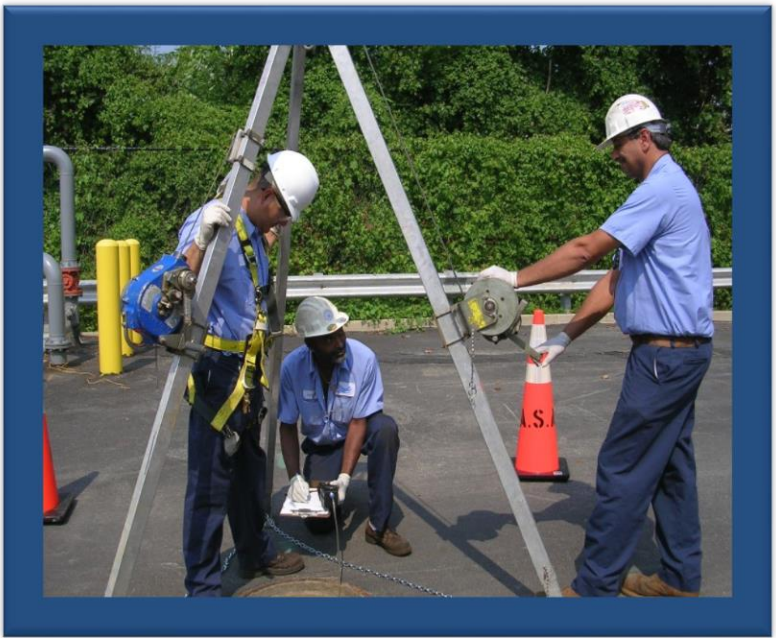
SAFETY STANDARD OPERATING PROCEDURES
ALEXANDRIA RENEW ENTERPRISES



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SECTION II
Safe Work Practices (SWP)

Introduction

Safe work practices are written guidelines and reference information describing recommended practices to follow for performing general routine activities in a safe manner.

AlexRenew personnel should follow adopted safe work practice during the performance of their daily activities.

1. Supervisory staff are responsible for:
   a. Training employees on safe work practices.
   b. Enforcing safe work practices.

2. Team and Shift Leaders are responsible for ensuring additional safe work practices are listed on process and work SOPs such as those listed in FIMMS and on Corrective and Preventive Maintenance Work Orders.

3. AlexRenew staff are responsible for:
   a. Familiarizing themselves with safe work practices.
   b. Observing safe work practices in the conduct of activities at their work site.

4. Adopted safe work practices are described in this section of the Safety SOP.

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Safe Work Practices

Work: **Aeration /Settling Tanks**

Practice:

1. Use care and caution when working around settling and aeration tanks.
2. Ensure that standard handrails and four (4) inch toe boards are provided and maintained around open settling and aeration tanks.
3. Ensure that walkways around open settling and aeration tanks are free of debris, unnecessary equipment, and all possible trip hazards.
4. Ensure adequate lighting is provided around settling and aeration tanks. If unsure about whether enough lighting is present, contact the Safety Manager.
5. Ensure that enough Personal Floatation Devices (PFD), ropes, and/or Shepherd's Hoods, are located around open settling and aeration tanks. If unsure about the required number, contact the Safety Manager.
6. Wear full body safety harness and life lines when leaning on or hanging over settling and aeration tank guard rails or safety chains.
8. Keep settling and aeration tank walkways free of ice or snow during freezing conditions.
9. Ensure that settling and aeration tank walkways are free of chemicals, solids, or other substances that may create slippery conditions.
10. Do not remove gratings or covers along settling tank walkways unless authorized work is being performed. Place guards in area of removed grating or covers.
11. Fall protection must be in place before aeration tank covers can be removed. Fall protection must remain in place until covers or guard rails are reinstalled. Keep aeration tank walkway hatch doors closed unless authorized work is being performed.
12. Before entering an empty aeration tank, ensure that the atmosphere is tested with an approved direct reading instrument.
13. Before entering an empty settling tank, ensure, that two ladders for egress are readily accessible at both ends of the thank.
14. Always use the two (2) man rule when entering an aeration tank. One worker must remain on the walkway as an attendant.

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Note: Refer to AlexRenew's Confined Space Entry Program for further information on entering BNR tanks.

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Safe Work Practices

Work: **Asbestos- Cement Pipe (Transit)**

Practice:

1. When repairs/modifications are to be made to transit pipe, EPA trained Asbestos workers/ supervisors are to be contracted to perform the work.

2. The on-site Supervisor will inform the Safety Manager.

DRAFT

Safe Work Practices

Work: **Biosolids Handling (Physical Contact)**

Practice:

1. Practice good personal Hygiene and safety to guard against occupational related diseases. (See Personal Hygiene Safe Work Practice)
2. Wear impermeable protective gloves whenever working in contact with biosolids. Always check gloves for leaks before staring work. Clean reusable gloves after use.
3. Wear rubber boots when standing in biosolids and clean them after use.
4. Wear safety glasses when in physical contact with biosolids.
5. Use mechanical ventilation to direct fresh air to the employees' breathing zone.
6. Wash hands with soap after handling biosolids.
7. Wash hands with soap before eating, smoking or, using the lavatory.

Optional practice at employee's discretion

1. Wear disposable, splash-proof, hooded coveralls sealed at the ankles and the wrists. Properly dispose of the suits after each use.
2. Wear dust masks to avoid breathing vapors or dust.

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Safe Work Practices

Work: **Bloodborne Pathogens**

Practice:

Note: Since it is possible to contract bloodborne pathogen diseases in just about all locations and occupations, employees need to abide by the guidance provided in this Safe Work Practice (SWP) and the SWP's for Personal Hygiene. The danger of bloodborne pathogens results from direct contact with pure body fluids. Care should be taken whenever one of the situations listed in this Safe Work Practice is encountered.

Note: **Although the Center for Disease Control (CDC) has determined that HIV and other Bloodborne Pathogens are not found in the wastewater stream (except in strictly controlled laboratory conditions), CDC does warn that persons who provide emergency first aid could become contaminated.**

For example, a worker could become contaminated with a Bloodborne Pathogen Disease if they rendered CPR, without proper personal protection, to a victim with such a disease. Similarly, if a worker attempts to aid another worker or person who is bleeding, the worker could become contaminated with the Bloodborne Pathogen Disease.

Rendering any kind of first aid assistance whereby the rescuer can/could be exposed to another person's bodily fluids much be done with caution and personal protection.

1. Know situations on the job that might result in exposure to Bloodborne pathogen infections:
    a. Job duties involving contact with human blood or other body fluids.
    b. Job duties involving contact with needles or other sharp instruments that might be contaminated with infected blood.
    c. Job duties involving contact with other materials contaminated with blood or other body fluids.
    d. Providing first aid assistance to co-workers.

2. Take precautionary measures:
    a. Assume all body fluids are infectious and act accordingly.
    b. Wear appropriate personal protective equipment before contact with blood or Potentially infected material, or when providing first aid.
    c. Know proper job procedures where contact with infected blood or other body fluids or contaminated material is possible.

3. Use the EMERGENCY BLOODBORNE PATHOGENS KITS provided for each AlexRenew operations work station, shop area, warehouse, each pump station, laboratory office area and the copy room in Building J. These kits are designed to protect AlexRenew employees from Bloodborne Pathogens Disease.

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Each kit contains:

Poly White Box (seal unbroken)
Protection Gown and Cap
Goggle/Mask/Gloves
I.L.S.C. Powder/Scraper/Gloves
Read bio-hazard bag w/ties
2 crepe towelettes
2 antiseptic wipes
Disinfectant towelette
Antimicrobial towelette
Mouth to mouth barrier
Scoop bag

4. Protect your eyes in those instances where body fluids could come into contact with or enter your body through the eyes.

5. Use response kits that are specifically designed for the clean-up and disposal of potentially infectious blood and body fluids. If you are an emergency responder for medical emergencies where first aid might be required, insure thorough training has been received and that procedures for protection and response are well understood. Emergency Bloodborne Pathogen Kits are ordered through the warehouse.

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Safe Work Practices

Work: **Bicycling**

Last Revised: 8/18/08

Practice:

1. Ride only AlexRenew purchased bicycles while on the plant site.
2. Inspect the bicycle at the beginning of each shift. Insure that the brakes work, seat is adjusted properly, chains are lubricated, the tires have adequate tread and are inflated to the manufacture's recommended air pressure (located on the side of tire), the kick stand is working if equipped, the body of the bicycle is in sound shape, and that there are no loose bolts. Note any mechanical problems with the bicycle on a work order. Take the bicycle out of service until the problem is fixed.
3. Ride bicycles on the right side of the street.
4. Do not jump sidewalk curbs.
5. Obey all traffic laws, signs, signals, and pavement markings.
6. Yield right of way to cars, trucks, forklifts, and pedestrians.
7. Avoid broken pavement, litter, potholes, loose gravel or anything that can cause a loss of control.
8. Ride single file, when in a group.
9. Do not transport objects weighing more than 100 lbs. or that are larger than the carrier basket.
10. Insure that samples transported by bicycle are only carried in the rear basket.
11. Avoid riding bicycles during periods of heavy rainfall, snow, and ice.
12. Insure lights are operational and used during hours of darkness or heavy fog. Remember the other motorist must be able to see you to avoid hitting you. Your lights are your tools to insure they can see you.
12. Wear hard hats when riding bicycles.
13. Always look behind you before turning or changing lanes.

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14. Maintain at least one vehicle length separation between the bicyclist and the motorist for each 5-mph of speed.

Safe Work Practices

Work: **Calibration of Gas Detector**

Practice:

1. Gas detectors must be recalibrated every 30 days.

2. Gas detectors are calibrated by a trained Instrumentation Technician assigned to the Centralized Maintenance Section using manufacturers procedures.

DRAFT

Safe Work Practices

Work: **Ceramic Diffuser Cleaning** (also see Safe Practice for Muriatic Acid)

Note: Ceramic diffusers are normally acid cleaned by contractor personnel. In which case the contractor will follow their company safety standards. If AlexRenew staff are to clean the diffusers they are to follow the instructions below.

When tanks are cleaned without Muriatic acid follow all instructions except numbers 10 and 12.

Practice:

1. Drain tank.
2. Remove all deck covers and install railings.

   Note: All personnel involved in removing tank covers or railings must have complete fall protection equipment on and connected to the Miller Edge device before work is to begin.

3. Clean tank and diffusers as much as possible from walkway.
4. Follow all Permit Required Confined Space Procedures, perform multi-point, multi-level atmospheric testing and document the results on the Confined Space Permit.
5. Two (2) employees suit up in a hooded chemical suit, rubber, gloves, rubber boots, chemical goggles, face shield, and carry a personal gas monitor.
6. Two (2) ladders are installed for exit from the BNR tanks. Entry is made thought the man way on the west end of the tank if possible.
7. Two (2) ladders are installed for exit from the BNR tanks. Entry is made through the man way on the west end of the tank if possible.
8. Fall protection must be utilized when going up or down the 40ft ladder from the BNR deck to the bottom of the BNR tank.

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9. A hose charged with portable water must be placed in the tank within ten feet of the workers. This hose must remain charged throughout the entire diffuser cleaning operation. The hose must be moved to maintain ten feet of travel distance in the event of an accident.

10. Muriatic acid is applied to ceramic diffusers using a pump sprayer.

11. There must be at least one (1) attendant at the top of the tank at all times while an employee is in the tank.

12. Acid is left on for 24 hours and then hosed off from a safe distance.

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Safe Work Practices

Work: **Chemical Handling**

Practice:

1. Use care and caution when handling chemicals. Consult the MSDS for proper uses and precautions prior to handling chemicals.
2. Store all chemicals in a safe place.
3. Label all small portable chemical containers indicating the chemical name and date of preparation and/or container opening. Larger, non-portable chemical containers need a label indicating the chemical name and the correct NFPA label.
4. Read labels on chemical containers before using to ensure that the proper chemicals are selected for use.
5. Properly dispose of unlabeled or out-of-date chemicals.
6. Contract the Pretreatment Program Coordinator for assistance when disposal of chemicals is needed. Never throw away chemicals in common trash cans.
7. Read and learn the directions given on material safety data sheets for each chemical's use and safety precautions listed.
8. Follow directions carefully. **Never** mix chemicals randomly and/or indiscriminately.
9. Handle chemicals carefully when pouring, measuring, or mixing to prevent spillage.
10. Clean up chemical spills immediately. Refer to the chemical's Material Safety Data Sheet (MSDS) if unsure about cleanup procedure.
11. Avoid personal contact with chemicals.
12. Wear the appropriate gloves when handling chemicals. Always check the gloves for cracks, tears, and leaks before use. See the material safety data sheet for the correct type of glove to use with a specific chemical. **Never** touch chemicals with bare hands.
13. Do not place fingers into the mouth, nose, or eyes while handling chemicals.

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14. Wash hands with a disinfectant soap after handling chemicals.

15. If a chemical spills on the skin, wash it off immediately with running water.

16. Avoid breathing chemical fumes, dust, or vapors. See the Material Safety Data Sheet (MSDS) for the appropriate respiratory protection.

17. Do not smoke or eat while handling chemicals.

18. If required by the MSCS, wear appropriate eye protection.

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Safe Work Practices

Work: **Coating/Painting Practices**

Practice:

1. Use care and caution when handling coatings, paints, lacquers, thinners, or solvents. Avoid inhaling the vapors. Wash hands thoroughly after using coating, paints, lacquers, thinners, or solvents.

2. Wear proper respiratory protection when painting. Consult the material Safety Data Sheet (MSDS) to ensure the correct type of protection is worn.

3. Use mechanical ventilation in spraying areas where dangerous quantities of flammable vapors, mists, combustible residues, dusts, or deposits are present and vent exhaust to a safe location. Ensure adequate ventilation is provided while applying coatings. Immediately following coating operations allow vapors to dissipate.

4. Do not permit welding, open flame, or sparks in areas where combustible or flammable materials are being sprayed.

5. Observe all "NO SMOKING" signs posted in spraying areas and paint storage rooms.

6. Use only approved portable explosion proof lamps in paint spraying areas in which dangerous quantities of flammable vapors, mists, combustible resides, dusts, or deposits are present.

7. Follow all safety precautions stated in AlexRenew's Confined Space Entry Program when painting in a confined space.

8. be familiar with the locations of portable fire extinguishers near paint and coating application areas.

9. Wear approved eye protection when using spraying equipment.

10. **Never** store paint and gasoline together. Paint must be stored in a flammable liquids cabinet or in an approved room containing an approved fire extinguisher and proper ventilation and free of rags and debris.

11. Protect skin from paint and solvents by wearing approved proper skin covering including gloves, clothing, and/or protective skin cream.

12. Observe flash points of materials.

13. Correctly ground paint equipment being used to protect against static electricity.

14. **Never** point spray guns at anyone.

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Safe Work Practices

Work: **Compressed Gas Cylinders**

Practice:

1. **Caution**
   a. Never substitute oxygen for compressed air.
   b. Never use oil or grease on oxygen cylinders.
   c. Never allow a direct flame, electric arc, or intense radiant heat to contact any part of the cylinder.
   d. Never use a cylinder without a pressure regulator or manifold.
   e. Never tamper with safety devices.

2. Handling and Storage of Cylinders
   a. Do not remove or change cylinder or markings.
   b. Protect cylinders from cuts and abrasions.
   c. Do not stack cylinders on top of one another.
   d. Use cylinders in an upright secured position, to prevent tipping.
   e. Refer to the manufacture or label on the compressed gas cylinder if unsure of how to use and store.
   f. Do not drop cylinders or allow them to strike each other violently.
   g. Do not use cylinders as supports, rollers, or for any purpose other than for that which they are intended.
   h. Label cylinders as **EMPTY** only when empty.
   i. Close valves and replace valve protection caps when not in use. ("In use" for the Laboratory is defined as used during the current week or seven-day period.)
   j. Store cylinders in a safe, dry, well-ventilated space.
   k. Do not store flammable materials/gases in the same area as compressed gases/air. For example, store oxygen and acetylene at least 20 feet apart or have them separated by a five-foot firewall. One exception is the use of oxygen and acetylene for welding purposes while on a welding cart or trailer. See Welding and Cutting SOP.
   l. Be aware of fitting/piping standards for different compressed gases. Many are not interchangeable. Do not modify or change standard fittings.
   m. Insure that all critical valves are marked.
   n. Never secure cylinders by running a chain through the screw caps and locking. This can interfere with locating and repairing leaks.
   o. Always use proper PPE's and safety procedures when working around compressed gas cylinders. Follow the Safe Work Practice for that particular chemical.
   p. Do not attempt to dispose of waste or unused gas. Return the container to our supplier properly labeled with valve outlet plugs or caps secured and a valve protection cap in place.

q. Always be aware of the hazards associated with the compressed gas you are working with in the event of a spill. For example, cryogenic liquids are at extremely low temperatures that will freeze the skin upon contact.

3. Transport of cylinders:
   a. Accept only cylinders that meet the (DOT) criteria for interstate transportation of compressed gasses.
   b. Inspect cylinders prior to signing a receipt or shipping papers. The inspection should determine the material condition of the containers, and insure that proper hazard markings are in place.
   c. Transport cylinders weighing more than thirty (30) pounds with a hand or motorized truck or overhead hoist.
   d. INSURE the safety cap is in place whenever compressed cylinders are transported.

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Safe Work Practices

Work: **Control of Nuisance and Hazardous Dust**

Practice: Note: **This safe work practice does not address sandblasting. There is a separate safe work practice for sandblasting.**

1. CAUTION
   a. Never perform grinding in an area where highly flammable chemicals, e.g., gasoline, are present or stored.
   b. Follow AlexRenew's "Hot Work Permit Program" whenever performing grinding in a potentially explosive atmosphere.

2. Identify the material(s) that are to be ground, chipped, scraped, machined, or scaled. Grinding, chipping, scraping, machining, and scaling operations often release nuisance and hazardous dust. If applicable, refer to the material's Material Safety Data Sheet (MSDS) and identify personal protective equipment or ventilation requirements needed when performing the tasks listed above.

3. Use a dust collection system, when performing large carpentry jobs (i.e.) cutting and sawing wood).

4. Use goggles, dust mask, face-shield, and work gloves when grinding, chipping, scraping, or machining inert materials such as wood, some metals, plastics, non-asbestos cement, or PVC.

5. Insure face-shields or goggles are clean and provide a clear unobstructed view of work.

6. Discard dust masks when breathing becomes difficult.

7. Always protect equipment and/or materials whenever grinding.

8. Always clean up the residue after grinding, chipping, scraping, or machining inert materials.

9. Insure that a ground fault circuit interrupter is used when using electrical equipment (i.e. grinders, chippers, or sanders) in wet environments.

10. Insure that electrical cords on equipment and extension cords are not frayed, broken, or damaged.

11. Notify your supervisor immediately if skin irritations occur during or after grinding, chipping, scraping, or machining activities.

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Safe Work Practices

Work: **Digester Cleaning – Anaerobic**

Follow instructions in AlexRenew's FIMS SOP

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Safe Work Practices

Work: **Electrical**

Practice:

1. Use care and caution when working around all electrical equipment.
2. Observe "**DANGER**" and "**HIGY VOLTAGE**" signs.
3. Stay clear of areas marked as "**HAZARDOUS**."
4. Only qualified and authorized personnel are to work on electrical equipment.
5. Follow our Lock-Out/Tag-Out Program.
6. Consider all electrical conductors and equipment to be "live" until positively proven de-energized by an electrician.
7. Do not bypass an electrical safety device.
8. Ensure that all electrical controls and switches are well marked and accessible.
9. Use only grounded or double-insulated electrical tools.
10. When using electrical tools in or near water, use a ground fault circuit interrupter.
11. Have frayed or broken electrical cords repaired immediately. **Never** tape electrical cords.
12. Use only fiberglass ladders when working around electrical lines and equipment.
13. Use only explosion proof portable lighting when working in combustible or explosive atmospheres such as manholes, enclosed chambers, digester tanks, etc.
14. Use carbon dioxide (C-type) or dry chemical type (B-type) fire extinguisher to control electrical fires. **Never** use foam or water type fire extinguishers on electrical fires.
15. When working on/around live circuits and electrical components the two-person rule must be followed. Moreover, proper personal protection as listed in (NFPA 70E) must be worn.
16. **Never** use an electrical control panel as a storage locker.

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Safe Work Practices

Work: **Electrical- Pulling Electrical Cable**

Practice:

1. Only qualified and authorized electricians or instrument technicians are to pull or run electrical cables.
2. Use care and caution when working around all electrical equipment.
3. Consider all existing electrical wires as "live" until positively proven de-energized by an electrician.
4. Follow AlexRenew's Lock-Out/Tag-Out Program
5. Use a properly inspected wooden or fiberglass ladder when pulling cables.
6. Wear safety goggles or glasses meeting the ANSI Z87 standard while pulling cables.
7. Wear dry leather work gloves when pulling cables.
8. If suspect asbestos containing material (i.e. insulation or transit board) is encountered contact the Safety Manager for proper identification of the material in question.
9. If heavy fiberglass insulation or dust is present employees need to wear a dust mask and gloves.
10. Electrical cables installed need to be free from frays and exposed wiring.
11. Electrical cables installed need to be free from frays and exposed wiring.
12. Employees need to insure that dropped ceiling tiles or insulation materials are put back into place and secured.

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Safety Work Practice

Work: **Elevated Work (Fall Protection)**

Practice:

1. The purpose of this Safe Work Practice is to establish a system for protection of personnel working at elevated heights of four (4) feet of greater above a lower level.

2. The objective of this Safe Work Practices is to:
   a. Prevent employee death and/or minimize employee injury resulting from falls from elevated work locations.
   b. Identify elevated work sites requiring fall protection equipment.
   c. Establish minimum standards for all protection equipment and systems and their application.

3. When exposure to a **Free Fall Hazard** cannot be prevented through such measures as permanent or semi-permanent guarded scaffolds or platforms, personal fall protection equipment must be used. This Work Practice applies to working at elevated work locations that are four (4) feet or more above floor or ground level. It covers activities such as, but not limited to; work in pipe racks, on sloped roofs, on unguarded scaffolding, when working from suspended scaffolds, floats or boatswain's chairs on tank tops; and when working inside or outside any process structure not equipped with appropriate guarded work platforms. This Work Practice does not apply to work form that equipment covered by General Safe Work Practices such as man lifts and portable ladders.

4. Supervisory staff will be responsible for evaluating the need for a personal fall protection system as an integral part of pre-planning a project.

5. When work must be performed at recognized unguarded elevated heights, the supervisor may select either option below:
   a. Option 1 – Fall Prevention: Eliminate the free fall hazard (greater than four (4) feet) during all phases of the job (traveling to and from elevated work areas as well as during the performance of the task at the elevated work area) by means of temporary scaffolding, platforms, railings, man lifts, and portable ladders, etc.
   b. Option 2 – Fall Protection System by selecting and installing a personal fall protection system, eliminating the free fall hazard (greater than 6 feet) when traveling to and from the elevated work areas as well as during performance of the task at the elevated work areas. Every effort must be taken to minimize the potential of the free fall hazards to individuals installing temporary or permanent fall protection system.

Note: **A rescue plan must be in place with necessary equipment on the job site before any fall protection system is used as listed in Option 2 above.**

6. Each employee assigned to work at elevated heights has the responsibility of thoroughly inspecting the personal fall protection system's anchor points, connecting means (i.e., lanyard or device) and body holding devices (harnesses) prior to using the system. Any problems noted with any of the above must be brought to the attention of the supervisor manager or team leader.

7. Any questions concerning the type of personal fall protection systems best suited for a particular job as well as system installation (e.g. anchor point type/strength), rescue plan should be directed to the Safety Coordinator.

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Safe Work Practices

Work: **Excavation, Trenching and Shoring**

Practice:

1. All excavations more than four (4) feet deep must be evaluated by a "Competent Person," meaning a person who is capable of identifying existing and predictable hazards in the surroundings or work conditions which are unsanitary, hazardous, or dangerous to personnel, and who is authorized to take prompt corrective measures to eliminate such hazards.

2. The estimated location of utility installations or other underground installations that may reasonably be encountered during excavation work shall be determined prior to opening an excavation.

3. While the excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard all personnel.

4. Structural ramps that are used by personnel and/or equipment as a means of access or egress form excavations must be designed by a "competent person" qualified in structural design and shall be constructed in accordance with the design.

5. Always ensure that a stairway, ladder ramp, or other safe means of egress is located in trench excavations of four (4) feet or more in depth. Do not have more than twenty-five (25) feet of lateral travel for personnel to reach a means of egress.

6. Wear a warning vest that is made of high-visibility material when exposed to vehicular traffic.

7. Keep a safe distance away from any vehicle while it is being loaded or unloaded.

8. Establish a warning system of barricades, hand signals, mechanical signals, or stop logs when mobile equipment is operated adjacent to an excavation, or when equipment is required to approach the edge of an excavation and the operator does not have a clear and direct view of the excavation edge.

9. Before any employee enters an excavation four (4) feet or more in depth where an oxygen deficient atmosphere or hazardous atmosphere may exist, the atmosphere in the excavation must be tested with a direct reading instrument.

10. Provide positive ventilation to a contaminated or oxygen deficient excavation whenever necessary.

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11. **Never** work in an excavation in which there is accumulated water or in excavations in which water is accumulating, unless precautions have been taken to pump the water out and away from the excavation site.

12. Where the stability of adjoining walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such surroundings.

13. Excavation below the level of the base or footing an any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when a registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity.

14. **Never** undermine sidewalks, pavements, or appurtenant structures unless a support system or other method of protection is provided.

15. Provide adequate protection against loose rock or soil rolling or falling into an excavation. This may be accomplished by scaling to remove loose material, installing protective barricades at intervals as necessary on the face to stop and contain falling material, or by other means that provide equivalent protection.

16. Keep material and equipment at least two (2) feet from the edge of excavations. If materials or equipment must be brought within two (2) feet of the excavation, use retaining devices that will prevent materials or equipment from falling or rolling into excavations.

17. Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a "competent person" for evidence of a situation that could result in possible cave-ins. An inspection shall be conducted by the "competent person" prior to the start of work, as needed throughout the shift, after every rainstorm, or after any other action that may increase the risk of a cave-in.

18. Do not evacuate an excavation if the "competent person" finds evidence of a situation that could result in a possible cave-in.

19. Walkways or bridges with standard guardrails must be provided when employees or equipment are required or permitted to cross over the excavation.

20. All wells, pits, shafts, etc. must be barricaded or covered upon completion of exploration and similar operations. This may be accomplished by back filling.

21. All trenches five (5) feet or more in depth must be sloped, benched, shored, or shielded according to 29 CFR 1926 Subpart P. The qualified/competent person in charge of the excavation must classify the type of soil at the site as either stable rock, Type A, Type B, or Type C soil.
    a. Stable rock refers to natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
    b. Type A soil is cohesive with an unconfined compressive strength of 1.5. tons per square foot. Type A soils include clay, silt, clay, sandy clay, clay loam, and hardpan.
    c. Type B soil is cohesive soil with an unconfined compressive strength greater than .5 tons per square foot but less than 1.5 toms per square foot.
    d. Type C soil is cohesive soil with an unconfined compressive strength of .5 tons per square foot or less. Type C soils include granular soils such as grave, sand, and loamy sand; submerged soil; soil from which water is freely seeping; or submerged rock that is not stable.

22. Hard hats and steel-toed shoes are required when trenching or working within a trench.

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Safe Work Practices

Work: **Fall Protection**

Practice:

1. Guard all permanent floor openings twelve (12) inches or more in dimension with standard railings.
2. Guard hatchways and chute openings with a hinged floor cover that is to be guarded when open, or removable railings with toe boards.
3. Guard skylight floor openings with standard screens or railings on all exposed sides.
4. Guard skylight floor openings with standard screens or railings on all exposed sides.
5. Guard all temporary openings or have a person in constant attendance to guard against the hazard.
6. Protect floor holes for fixed machinery so there is no opening wider than one (1) inch.
7. Guard open-sided floors, platforms, and runways that are four (4) feet or more above the floor or ground and standard guardrails and tow boards.
8. Provide standard railings for all runways, floors, platforms, walkways, etc. above dangerous equipment. (tanks, vats, etc.)
9. All holes or pits that are in walking surfaces and could cause a trip hazard are to be covered or guarded.
10. Paint yellow and black stripes or place yellow and black tape on all elevations in walking surfaces that could cause a trip hazard.
11. Fall protection systems must be worn by employees that are working four feet above next level that has no other means of fall protection such as standard guardrails.
12. The Miller Edge device will be in place with two trained workers attached to it with full body harnesses before any hand rails or tank covers are removed from the BNR basins.
13. Lifelines and harnesses need to be worn by employees that are working on a roof without guard rails.

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14. Lifelines and harnesses need to be worn by employees that are working on scaffolding that is ten (10) feet or more above the ground or floor.

15. Fixed ladders with more than a twenty (20) foot drop to the ground or floor level need to be guarded with a cage or have a fixed rail climbing system.

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Safe Work Practices

Work: **Ferric Chloride**

Practice:

1. AlexRenew staff must be trained and instructed on the use and handling of ferric chloride, ferric chloride equipment, and ferric chloride emergency response. Refer to the Material Safety Data Sheet (MSDS).

2. Use extreme care and caution when handling ferric chloride.

3. When handling ferric chloride or servicing the ferric chloride system follow the Personal Protective Equipment (PPE) guidelines indicated on the MSDS sheet which may include rubber boots, gloves, face shield, splash-proof safety goggles, impervious coverall and jacket. Compatible materials for personal protective equipment include butyl rubber, natural rubber, neoprene, and nitrile rubber.

4. Ensure ferric chloride containers are properly labeled. NFPA label should read as follows:

Health:	3	(Blue)
Flammability:	0	(Red)
Reactivity:	0	(Yellow)
Special Hazards:	Corrosive	(White)

5. Ensure that an eyewash/shower or hose with potable water is in the immediate area before working on ferric chloride systems or with ferric chloride.

6. Before putting the ferric chloride system into service, check to assure that the following valves are OPEN:

   Desired feed point valves
   Pump suction valves
   Pump discharge valves

   Note: **If unsure about the location of the above valves, check process schematic.**

7. Before putting the ferric chloride system into service, check to assure that the following valves are CLOSED:

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Feed line valves from storage tanks not in use
Pump isolation valves for chemical feed pumps not in use
Pump discharge valves along feed line not in use from chemical pump to feed point.
Calibration of cylinder valves.

Note: **If unsure about the location of the above valves, check process schematic.**

8. When putting ferric chloride systems into service, remember that only one (1) ferric chloride storage tank can supply ferric chloride to the feed pumps at any given time.

9. Flush chemical feed systems for ferric chloride if it is to be out of service for a prolonged period of time.

10. When taking the chemical feed system for ferric chloride out of service, **Never** close a valve while a pump is running. Severe damage to equipment or injury could result.

11. Periodically inspect ferric chloride chemical feed system for leaks. Man ways gaskets and bolts on ferric chloride thanks must be inspected as well.

12. Report any problems or leaks of ferric chloride to the appropriate team leader and Shift Supervisor immediately. Open a work order in the Computerized Maintenance Management System (CMMS).

Note: **A significant release of ferric chloride must be reported using AlexRenew's Incident Record and Resolution Report.**

13. Call the rescue squad at 9-911 if a person is incapacitated or in any way by ferric chloride.

14. Trained personnel should administer CPR immediately to a person that has been incapacitated by ferric chloride and is not breathing. (CAUTION: Administration of mouth to mouth resuscitation may expose the first aid provider to the chemical within the victim's lungs or vomit –use barrier mask). Summon medical attention as soon as possible.

15. Place a person who does not have difficulty breathing and is contaminated with ferric chloride into a shower. Remove clothing under running water and wash all portions of the body that were exposed to ferric chloride. Get medical attention immediately.

16. Flush eyes contaminated with ferric chloride immediately with running water for at least fifteen (15) minutes, occasionally lifting the eyelids and rotating the eye ball.

17. If ferric chloride is accidentally ingested, drink large quantities of water. Do not induce vomiting. Get medical attention immediately.

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Safe Work Practices

Work: **Forklift Operation (See additional guidance in the Driving section of the Personnel Policies and Procedures Manual.)**

Practice:

1. Only AlexRenew certified personnel are permitted to operate a forklift.
2. Use care, caution and seatbelts when operating a forklift.
3. Complete all daily maintenance (fuel, air, water, hydraulics, transmission, battery, brakes, tires, controls) and visual checks. (see Forklift Operators Manual).
4. Mount and dismount forklifts carefully.
5. Sit on the seat. Keep arms and legs inside of the cab all the time.
6. Observe traffic and keep to the right.
7. Do not allow passengers on the forklift.
8. Slow down or stop at all blind intersections; yield at all others.
9. Always observe all traffic rules, load limit warnings, and overhead clearance.
10. Sound a warning device at all cross aisles, exits, elevators, sharp corners, ramps, blind corners, and when approaching pedestrians.
11. Face direction of travel. **Never** back up without looking.
12. Do not exceed rated capacity. Check unit capacity if attachments are installed.
13. Keep forks at four (4) to six (6) inches above ground level when traveling.
14. Travel with the load facing uphill on inclines and downgrades.
15. Operate in reverse when carrying bulky loads and when line-of-sight over the load is obstructed.
16. Travel at speeds that allow for safe stops.
17. Keep at speeds that allow for safe stops.
18. Position the load evenly on both forks.

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19. Ensure that awkward loads are secured.

20. **Never** permit anyone to stand on or to pass under the elevated portion of the mast or attachments.

21. Lower forks, put forklift in neutral, shut off the forklift, set the brake, and if parked on an incline, block the wheels before leaving the forklift. Park the forklift in authorized areas only.

22. Refuel or change LP cylinders only at safe locations. Fully lower load engaging controls, neutralize motion controls, set brakes, shut off power, remove key, block wheels on incline, and do not smoke.

23. Do no operate unit without overhead guard in place.

24. Do not operate any forklift that is in need of repair, defective, or in any way unsafe.

25. **Never** raise anyone up in the air while they are standing on the forks. Use an appropriate safety platform.

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Safe Work Practices

Work: **Fueling John Deere Tractor**

Practice:

1. Do not smoke near the fuel pumps or while fueling.
2. Make certain that you are using the proper type of fuel for the tractor.
3. Stay with the tractor during the fueling operation.
4. Position the tractor so that the fuel fill cap is close to the fuel pump.
5. Lower the front bucket to the ground.
6. Insure the tractor is in “neutral” and the parking brake is on. Shut off the engine.
7. Ascend and descend the ladder using both bands and with caution.
8. Notify your supervisor immediately if you notice any mechanical or structural problems with the tractor.
9. Notify your supervisor immediately if you notice any deterioration or leaks associated with fuel pump, hoses, or nozzle.
10. Keep nozzle upright to avoid small spills.
11. Stand on the tractor platform when fueling. Do not hang off the ladder.
12. After fueling the tractor, remember to remove the nozzle from the fill neck. Return the nozzle to the nozzle holder on the fuel pump and reinstall the fill cap.
13. Clean up any small fuel spills immediately with absorbent material. Notify your supervisor immediately if a large fuel spill occurs.

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Safe Work Practices

Work: **Garage/Shop Safety**

Practice:

1. Tools will be cleaned after each use.
2. Any oil grease on the floor will be removed immediately.
3. Ensure that all lifting devices (floor jacks, lifts, hoists, beams) used have a rated load capacity marked on them.
4. **Never** exceed the rated load capacity of a lifting device.
5. Ensure that hazardous chemicals are stored properly and that their shelf life is still good.
6. The garages and shop areas are **"No Smoking"** areas.
7. Engines will run inside for as short a time as possible, unless sufficient measures have been taken to lead the exhaust outside by ducting.
8. Wear appropriate personnel protective equipment for the job. See the sections on welding, portable tools, painting, and chemical handling.
9. Ensure that all drop lights and extension cords used are not cracked and are properly grounded.
10. **Never** leave a vehicle unattended while it is running.
11. Wear hearing protection when using loud pneumatic tools or machinery.
12. Wear steel-toed shoes and protective clothing when working in the shop or garage area.
13. Dispose of all hazardous waste properly. Contact the Pretreatment Program Coordinator when disposal of chemicals is needed.
14. At the end of the workday, ensure that the lids to parts-cleaning machines are shut and that all tools, chemicals, and machinery are secured. Ensure that greasy or oily rags are stored in metal containers with a closed lid.

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Safe Work Practices

Work: **Handling Grit – Building K**

Practice:

1. Using care and caution when working around grit.
2. When shoveling or lifting grit, wear work gloves and appropriate eye protection. Follow proper lifting techniques and avoid twisting at the waste or holding the load.
3. Ensure all mechanical grit handling equipment is Locked Out/Tagged Out using AlexRenew's procedure before opening machine guards.
4. Beware of overhead discharging.
5. Beware of rotating equipment when working on grit equipment.
6. Ensure that grit trailers are hauled off promptly and as soon as the trailer is full.
7. Do not eat, drink, or smoke while handling grit.
8. Wash hands immediately after handling grit.
9. Ensure that all scrapes, cuts, or open wounds are covered and protected while handling grit.

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Safe Work Practices

Work: **Handling Storage Batteries**

Practice:

1. Use care and caution when transporting, lifting, or handling batteries.
2. Wear full eye protection, face shield, rubber gloves, rubber boots, and a rubber apron when handling electrolyte.
3. Use insulated tools and remove rings, watches, and metal jewelry. It is acceptable to tape over rings that you prefer not to remove with insulated electrical tape.
4. Install batteries in rooms or compartments that are ventilated to provide free circulation of air.
5. Do not smoke or introduce an open flame or spark into the battery area, especially when the battery is being charged.
6. Do not lay or allow any tools or any metal parts to fall across the terminals of battery.
7. Before charging or discharging batteries, remove and discard shipping plugs. Install and close the vent caps before charging or discharging the battery.
8. Maintain proper electrolyte level by adding water as required. Use only distilled or demonized water.
9. Keep batteries clean and dry. Use only water for cleaning cells.
10. Open a work in the (CMMS) when repair work is needed on batteries.
11. Report any type of damage to a battery to a supervisor/manager or team leader immediately.
12. Store batteries in well-ventilated spaces that do not contain flammable materials.
13. Protect batteries from rain, snow, ice, etc.
14. Report any electrolyte spills to supervisor/manager or Team Leader immediately.
15. Consult material safety data sheet for cleanup/neutralization of spilled electrolyte.
16. If electrolyte contacts skin, wash off immediately.

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17. If electrolyte contacts eyes, thoroughly flush with plenty of water for at least fifteen (15) minutes. Get immediate medical attention.

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Safe Work Practices

Work: **High Noise Areas**

Practice:

1. Observe all signs stating that hearing protection is required.
2. Ensure that hearing protection is worn properly. Improper use is the biggest problem with hearing protectors.
3. Ensure that hands are clean before inserting any ear plugs in the ear.

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Safe Work Practices

Work: **Hot Work Permit**

Practice:

Note: OSHA's Confined Space Standard, 29 CFR 1910.146, requires AlexRenew's employees and contractors to employ safe work practices when performing hot work in confined spaces. Moreover, a hot work permit must be used when working on or near certain hazardous materials/chemicals (e.g., methane gas).

Note: Hot work is defined as the use of oxy-acetylene torches, welding equipment, grinders, cutting, brazing, or similar flame-producing or spark-producing operations.

1. A Hot Work permit will be required for contractors and AlexRenew employees for any hot work performed in a confined space and/or "in or near" explosive/flammable hazards or hazardous material/chemical process and facilities as follow:
   a. Work within a confined space.
   b. Work on tanks, containers, piping feed systems containing fuels.
   c. Work within 25' of a digester (direct flame only).
   d. Work within 25' of any flammable/combustible material with NFPA Fire rating of 2 or greater.
   e. Wherever a "Hot Work Permit Required" sign is posted.
   f. Work, where in AlexRenew's supervisor's judgment ignition/explosion of chemicals could occur from sparks, hot slag, etc.
   g. In any area where the flammable materials can not be moved to a safe area away from the hot work being performed. (50 feet minimum)

Note: **Hot Work Permits are not required when the potential for the hazard can be removed throughout the duration of work.**

2. When contractors perform work on AlexRenew property and lines, AlexRenew Construction Project Engineers and/or the Safety Coordinator will point out to the Contractors where Hot Work Permit procedures will be required.

3. Hot Work Permits expire upon completion of each indicated task and at the end of the workday. A new permit must be completed and issued at the beginning of each workday.

4. After AlexRenew's Supervisor completes section 1 and 2 of Hot Work Permit, White Tag Copy will be passed on to the AlexRenew maintenance staff who will complete Section 3 and display White Copy of Permit at work site until hot work operations are completed. Air sampling to determine oxygen level and L.E.L will be completed and readings entered on the Hot Work Permit form. Continuous for air monitoring will be done for the entire duration of the project.

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5. The Yellow or Pink copy will remain in the Hot Work Permit Issuance Book maintained by the AlexRenew Team Leader for the area or group or the Construction Project Engineer for at least one year.

6. Permit Information:
   a. The Hot Work Permit lists requires safe work practices that must be documented in the permit and followed during the specified hot work operations. Any of the safe work practice items listed in the permit that are not applicable to a particular work operation must be noted in the appropriate comment area.

Filling out the Hot Work Permit

1. The AlexRenew Hot Work Permit is divided into three (3) sections. The procedure for completing each of these three section is described as follows:
   a. Section 1 must be completed by the designated AlexRenew work site supervisor/lead. This supervisor/lead must be trained on hot work; safe work practices and permitting procedures.
   b. Section 2 must be completed and verified by the designated AlexRenew work site supervisor. This supervisor must be trained in hot work safe work practices and permitting procedures.
   c. Section 3 must be completed by the AlexRenew maintenance person who is to perform the Hot Work.

Note: The Hot Work cannot proceed unless all items in Section 2 and 3 are checked "yes" or indicated as non-applicable (N/A) in the comment section. A check of "yes" by the designated supervisor r AlexRenew maintenance person verifies that the designated supervisor has verified that the indicated safe work practice is accomplished.

2. Section 1:
   a. Work Description – Describes the Hot Work to be accomplished and location.
   b. Tools To Be Used/Special Hazards – Describes tools to be used in performing Hot Work, e.g., welding machine, oxy-acetylene, brazing equipment, etc. Additionally, any special hazards such as concerns for air quality while performing the hot work must be entered here.
   c. Permit issued – AlexRenew person name is entered here.
   d. Time – Enter time Hot Work is to begin and end.
   e. Date – Effective date of the permit.

Note: A new permit must be issued each day.

   f. Permit Issued By (Name) – AlexRenew staff member who issued the permit.

3. Section 2:
    a. Lines/Tanks Washed – Lines/Tanks have been washed and are free of chemical and flammable residue.
    b. Lines/Tanks Drained – Lines/Tanks have been drained and flushed of chemicals/flammables.
    c. Lines/Tanks pressure Vented – Pressure lines/tanks have been vented.
    d. Lines Blinded/Disconnected – Lines undergoing hot work that might pose a hazard to other connected parts/systems have been blinded/disconnected.
    e. Valves off/Locked/Tagged – Affected valves in systems/lines are closed and Lockout/Tagout is complete
    f. Power Off/Locked/Tagged – All stored energy sources of affected system are placed in zero energy state and lock/tagged.
    g. Interfacing Areas Notified – Adjacent buildings, rooms, and compartments that might be affected by the hot work must be inspected and personnel, in affected areas notified of adjacent hot work.
    h. Extinguisher Present – An appropriately rated fire extinguisher is present at the hot work site.
    i. Confined Space – For hot work performed in a confined space, confined space entry by permit procedures have been completed. Always ensure oxygen and (L.E.L) levels are listed.
    j. Oxygen Level – For hot work performed in a confined space, enter the oxygen level in the comment section. This entry is made by AlexRenew's qualified atmosphere tester for hot work performed by AlexRenew staff.
    k. (L.E.L.) – For hot work perform in a confined space, enter the lower explosive limit (L.E.L) in the comment section. This entry is made by AlexRenew's qualified atmosphere tester.
    l. Fire Watch – All hot work requires the stationing of a designated Fire Watch. The Fire Watch must be trained and remain on station for at least 30 minutes after completion of hot work to guard against re-flash. For hot work not involving the application of direct flame, Fire Watch can be relieved of Fire Watch Duties after a thorough inspection of hot work area has been made to ensure that there is no danger of re-flash produced from hot metal ships/slag residue. Fire Watch's name must be entered on the permit.
    m. Atmosphere Tester Signature – If Confined Space (L.E.L) and oxygen testing is required. A qualified atmosphere tester for AlexRenew will test the atmosphere and sign the hot work.
    n. Site Supervisor's Initials – The AlexRenew site supervisor verifies the permit information in Section 1 and 2.

4. Section 3:
    a. Lines Blinded/Disconnected – Lines undergoing hot work that might pose hazard to other connected systems have been blinded/disconnected.
    b. Valves Off Locked/Tagged – Affected valves in the system/lines are closed and Lockedout/Tagedout.

c. Power Off Lock/Tagged – All stored energy sources of the affected system are to be placed in zero energy state and locked/tagged.
d. Air Mask – For hot work performed in confined space or where possible inhalation of fumes is excessive, the appropriate OSHA/NIOSH approved Respiratory Protection Procedure (RPP) must be followed.
e. Air Bottle checked – For hot work performed in confined space or where possible inhalation of fumes is excessive, the appropriate air supply bottles must be utilized.

Note: Only Grade D breathing air is permitted. Pure oxygen is prohibited.

f. Glasses/Gloves – OSHA approved glasses and gloves are to be used.
g. Protective Cloth –Covering for protecting combustibles when hot work might produce slag and sparks that could cause a fire.
h. Area Roped Off/Barricaded With Signs – Whenever hot work is performed in an area where normal transit of personnel takes place, it must be roped off. If a normally transited area cannot be roped off to prevent unauthorized entry, then it must be barricaded with appropriate warning signs posted.
i. Fire Watch Present – Verify there is a Fire Watch present.
j. Screens and Curtains – Welding operations must be conducted with proper screens or curtains to protect passing personnel form ultraviolet radiation.
k. AlexRenew Maintenance Person – An AlexRenew maintenance person will verify that all indicated items have been completed.

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Safe Work Practices

Work: **Housekeeping**

Note: **According to the OSHA Standards for General Industry, 29 CFR 1910.22 (a) all places of employment, passageways, store rooms and service rooms shall be kept clean and orderly in a sanitary condition.**

1. Conduct routine scheduled housecleaning.
2. Keep all places of work including service rooms, storage rooms, passageways, and exits clean and orderly.
3. Organize and maintain storage places for all tools, equipment and supplies.
4. Keep tools and equipment in their proper place when not being used. **Never** leave tools or equipment lying around the plant grounds.
5. Store rakes and poles on mounting brackets. **Never** leave rakes or poles lying on the ground or floor.
6. Use care and caution when stacking material and supplies. **Never** stack materials or supplies to excessive heights. Material on top shelves must be stored greater than 24 inches from fire sprinklers.
7. Keep storerooms clean and free of rubbish and junk.
8. Keep areas around fire extinguishers, fire alarms, fire sprinkler valves and emergency eyewashes/showers free of material that could impede access to these devices.
9. Keep forced ventilation systems in good working order and free from air blockages.
10. Keep floors and stairs as dry as possible. When cleaning main walkway areas, post "CAUTION WET FLOOR" signs.
11. Keep floor drains free and unclogged.
12. Use splash guards and drip pans to keep floors clean and dry.
13. Hose down spills immediately.
14. Avoid walking in sludge.

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15. Keep all walk areas free of sludge, slime, caustics, polymer, rags, grit, grease, oil, or other materials that could cause slipping.

16. Remove ice and snow from walkways and other heavily traveled areas.

17. Remove ice and snow from around hire hydrants to make them accessible in the event of a fire.

18. Place all rags, grit, grease, or other skimmings in the proper containers. **Never** place skimmings in open piles on the ground or concrete deck.

19. Place trash, debris, rubbish, etc. in their proper containers.

20. Keep access and equipment hatches in place and secured except when in use.

21. Post "WARNING" signs and protect against low obstacles such as beams, pipes, valves, suspended equipment, etc. that could strike one in the head.

22. Place "WARNING" signs and barricades around open manholes, hatches, gratings, pits etc.

23. Provide adequate inside lighting in shop, equipment, and storeroom areas.

24. Provide adequate outside lighting in walkway and work areas.

25. Wash down tank bottoms to remove all slippery sludge before working in the area.

26. Extinguish and dispose of cigarettes in the proper receptacle.

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Safe Work Practices

Work: **Laboratory (Also see AlexRenew Laboratory Chemical Hygiene Plan)**

Practice:

1. Use care and caution when working in the laboratory.
2. Store chemicals in a safe place where they are not hazardous to personnel or property.
3. Label all chemical containers indicating the chemical name and date of preparation and/or container opening.
4. Check the labels or chemical containers before using to ensure that the proper chemicals are selected for use.
5. Properly dispose of unlabeled or out-of-date chemicals. **Never** throwaway chemicals into common trash containers. Refer to the (MSDS) or contact the AlexRenew Pretreatment Coordinator for disposal instruments.
6. Read and learn the directions for each chemical's use and safe handling. This information is found on the chemical's Material Safety Data Sheet (MSDS).
7. Follow directions carefully. Never mix chemicals randomly or indiscriminately.
8. Handle chemicals carefully when pouring or measuring to prevent spillage.
9. Immediately clean up chemical spills according to the directions on the chemical's Material Safety Data Sheet (MSDS).
10. Avoid physical contact with chemicals.
11. Wear the correct glove for the chemical being handled. Refer to the chemical's Material Safety Data Sheet (MSDS), if unsure about the proper protection. **Never** touch chemicals with bare hands.
12. Ensure that protective gloves are free of cracks, tears, and holes, and that the gloves fit properly before handling any chemicals.
13. Do not place fingers into mouth, nose, ears, or eyes while handling chemicals.
14. Wash hands with a disinfectant soap after handling chemicals.
15. Wash off chemicals spills on skin immediately with running water.

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16. Do not smoke or eat in the laboratory.

17. Avoid eating smoke or eating in the laboratory.

18. Provide positive ventilation to laboratory work areas.

19. Dispose of all broken, chipped, or cracked glassware in a container specifically for glass.

20. Do not use laboratory glassware as coffee cups or food containers.

21. Use a suction bulb to pipette chemicals or wastewater. **Never** use the mouth to suck up a fluid or chemical in a pipette.

22. Use safety goggles and/or face shields when transferring, measuring, or whenever there is a potential for chemicals to be splashed in the eyes as required by the applicable chemical (MSDS) sheet.

23. Use tongs or asbestos gloves when handling hot equipment.

24. Only properly grounded electrical equipment should be used.

25. Always add acid to water, not water to acid.

26. Use carbon dioxide or dry chemical type fire extinguishers to control laboratory fires.

27. Ensure that the laboratory emergency eyewash and showers are functioning properly. Perform a function test and document the test on each emergency shower weekly.

28. Verify that a fume hood is operating correctly before beginning work in one.

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Safe Work Practices

Work: **Ladders**

Practice:

1. Care and caution must be practiced when using ladders.

2. Each ladder must be inspected when purchased and before each use.

Inspect the ladder for:

a. Cracked, split, broken steps, rungs, or braces
b. Loose steps or rungs
c. Loose metal parts
d. Visible wood or metal slivers

To use ladders safely and effectively, AlexRenew staff must:

1. Know the rules of ladder safety.
2. Observe these rules at all times.

Remember that practically all falls from ladders can be traced to using them in an unsafe manner. When a fall occurs, the person who falls usually gets hurt. This means that you must observe ladder safety rules because you are the one who will get hurt if you don't. Others may be injured also.

OSHA requires that safe equipment be furnished for use. But it is the responsibility of the user to USE THIS SAFE EQUIPMENT SAFELY. A fall from a ladder can kill. It can disable a person for the rest of their life.

TECHNICAL INFORMATION

Ladder safety begins with the selection of the proper ladder for the job and includes inspection, setup, proper climbing and standing, proper use, care, and storage. In addition to the general safety rules for all ladders there are special rules for using stepladders and for single and extension ladders.

These safety rules are a combination of OSHA regulations and proven commonsense procedures. This combination of safe equipment and its safe use can eliminate most ladder accidents.

General Safety Rules for All Ladders

Ladder Selection

1. Be sure the ladder being used has the proper duty rating to carry the combined weight of the user and the material being installed.
2. A ladder's duty rating tells you its maximum weight capacity. There are four categories of duty ratings:

Type IA These ladders have a duty rating of 300 pounds. Type IA ladders are recommended for extra-heavy-duty industrial use.	**Type I** These ladders have a duty rating of 250 pounds. Type I ladders are manufactured for heavy-duty use.
Type II These ladders have a duty rating of 225 pounds. Type II ladders are approved for medium-duty use.	**Type III** These ladders have a duty rating of 200 pounds. Type III ladders are rated for light-duty use such as homeowners.

3. **Type IA and Type I ladders are the only acceptable ladders on a construction jobsite.**
4. Be sure that metal steps and rungs are grooved or roughened to prevent slipping.
5. Use the proper size ladder for the job.

Choose the Right Extension Ladder	
Height To	**Buy**
	This
Top	**Size**
Support	**Extension**
Point	**Ladder***
9’ max.	16’
9’ to 13’	20’
13’ to 17’	24’
17’ to 21’	24’
21’ to 25’	32’
25’ to 28’	36’
28’ to 31’	40’
* Reflects section overlap, ladder angle and 3’ extension above roof line.	

Choose the Right Sep Ladder	
Maximum Height you Want to Reach**	**Buy This Size Stepladder**
7’	3’
8’	4’
9’	5’
10’	6’
11’	7’
12’	8’
14’	10’
16’	12’
18’	14’
20’	16’

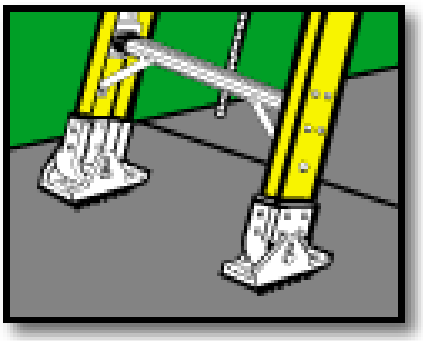
Ladder Inspection

1. Always check a ladder before using it.
2. Never use a damaged ladder. Tag it "Defective" and report it to the Team or Shift Leader so that it may be repaired or removed from AlexRenew’s inventory.

Ladder Setup

1. Place ladder feet firmly and evenly on the ground or floor.
2. Make sure the ladder is sitting straight and secure before climbing it.
3. Do not try to make a ladder reach farther by setting it on boxes, barrels, bricks, blocks or other unstable bases.
4. Do not allow ladders to lean sideways. Level them before using.
5. Brace the foot of the ladder with stakes or place stout boards against the feet if there is any danger of slipping.
6. Never set up or use a ladder in a high wind.
7. Never set up a ladder in front of a door unless the door is locked or a guard is posted.
8. Do not use ladders on ice or snow unless absolutely necessary. If they must be used on ice or snow, use spike or spur-type safety shoes on the ladder feet and be sure they are gripping properly before climbing.

9. Use Safety shoes on ladder feet.



Ladder Climbing and Standing

1. Keep the steps and rungs of ladders free of grease, oil, wet paint, mud, snow, ice, paper and other slippery materials. Also clean such debris off your shoes before climbing a ladder.
2. Always face a ladder when climbing up or down. Use both hands and maintain a secure grip on the rails or rungs.
3. Never carry heavy or bulky loads up a ladder. Climb up yourself first, and then pull up the material with a rope.
4. Climb and stand on a ladder with your feet in the center of the steps or rungs.
5. Do not overreach from a ladder, or lean too far to one side.
6. Never climb onto a ladder from the side, from above the top or from one ladder to another.
7. Never slide down a ladder.

Proper Use of Ladders

1. Never use metal ladders around exposed electrical wiring.
2. When using a ladder where there is traffic, erect warning signs or barricades to guide traffic away from the foot of the ladder.
3. Do not try to move a ladder while you are on it.
4. Do not leave tools or materials on top of ladders.
5. Never push or pull anything sideways while on a ladder.
6. Allow only one person at a time on a ladder unless the ladder is specifically designed for two people.
7. Never use a ladder as a horizontal platform, plank, scaffold or material hoist.
8. Be cautious about homemade ladders.
9. Never use a ladder on a scaffold platform. If you need to reach higher, the scaffold should be higher.

Proper Ladder Care and Storage

1. Maintain ladders in good condition.
2. Keep all ladder accessories, including safety shoes, in good condition.
3. Wood ladders, which are to be used outside, should be treated to prevent weather damage.
4. Never paint a wood ladder.
5. Never use a metal or fiberglass ladder which has been exposed to fire or strong chemicals, it should be destroyed and discarded.
6. Never store materials on a ladder.
7. Store wood ladders where they will not be exposed to excessive heat or dampness.
8. Store fiberglass ladders where they will not be exposed to sunlight or other ultraviolet light sources.
9. Be sure that ladders are properly supported and secured when in transit. Vibration and bumping against other objects can damage them.
10. Store ladders on racks, which give them proper support when not in use.

Additional Safety Rules for Stepladders

1. Never use a stepladder over 20 feet long.
2. Always open a stepladder completely and make sure the spreader is locked open before using the ladder.
3. Never substitute makeshift devices of wire or rope for stepladder spreaders.
4. Do not stand higher than the second step from the top of a stepladder. Especially, or on the back of a stepladder.
5. Do not straddle the front and back of a stepladder.

Additional Safety Rules for Single Ladders and Extension Ladders

Ladder Selection and Inspection

1. Remember that the sections of an extension ladder should overlap enough to retain the strength of the ladder using the following table:

Length of Ladder	Required Overlap
Up to 36 feet	3 feet
Over 36 to 48 feet	4 feet
Over 48 to 60 feet	5 feet

2. Of course, the usable length of the ladder is shortened by the amount of the overlap.
3. Never splice or tie two short ladders together to make a long section.
4. Top support for a ladder is as important as good footing. The top should rest evenly against a flat, firm surface.

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5. When a ladder is used for access to an upper landing surface, it must extend three rungs, or at least three feet above the landing surface (see diagram at the end of this section).
6. A ladder used for access to an upper landing surface should be secured against sideways movement at the top or held by another worker whenever it is being used.
7. If possible, the base of a long ladder should be secured to the ground and the top should be tied to the upper landing surface.
8. The base should be set out one-fourth of the ladder's height to its top support point. For example, if a ladder is to be supported at a point 20 feet off the ground, its base should be set 5 feet out from the wall (20 feet divided by 4= 5feet). An easy way to measure this, if the ladder top will rest against the wall, is to pace off the length of the ladder or count the rungs, and divide by four to get the proper distance from the wall for placing the foot of the ladder.
9. The distance from the foot of a ladder to the wall should never be more than one-half the height to the support point, an angle of about 63 degrees above horizontal. Otherwise, more strain will be put on the side rails than they are designed to carry.

Proper Ladder Care and Storage

1. Metal bearings of extension ladder rung locks and pulleys should be lubricated periodically, and between regular maintenance periods whenever necessary.

2. Ropes on extension ladders should be in good condition. If they become frayed or badly worn, replace them.

Setting Up a Straight or Extension Ladder

It is very important to learn the proper methods for setting up ladders. Unless setting up is done correctly, it can cause damage to the ladder and excessive physical strain on the user.

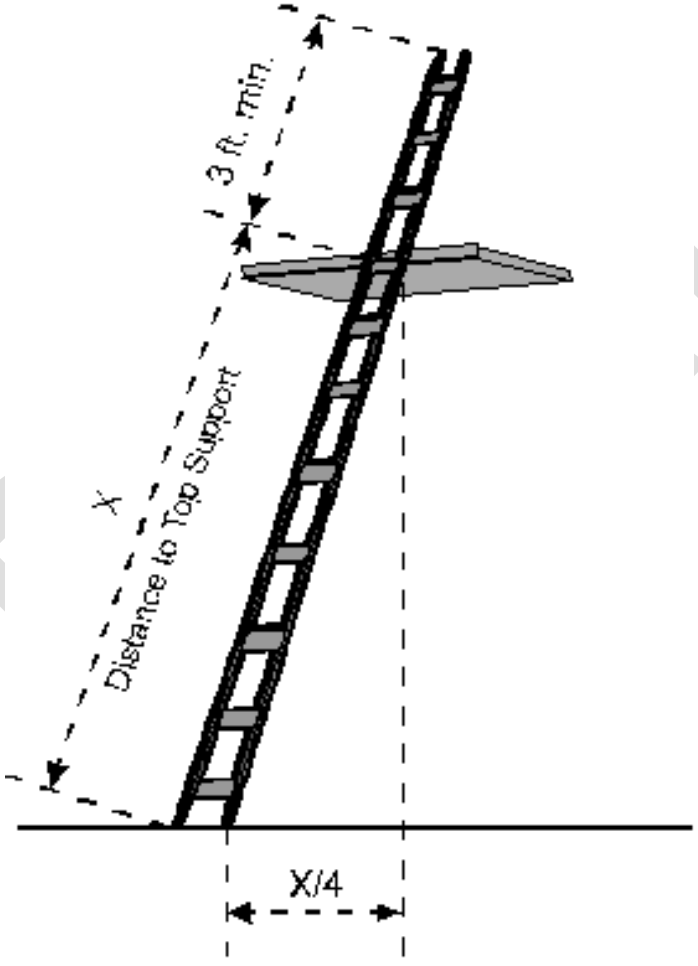
Step 1. Lay the ladder on the ground with the base resting against the bottom of the wall and the top pointing away from the wall.

Step 2. Starting at the top of the ladder, lift the end over your head and walk under the ladder to the wall, moving your hands from rung to rung as you go.

Step 3. When the ladder is vertical, and the op touches the wall, pull out the base so that the distance away from the wall is about one-fourth of the height to the point of support.

Step 4. Reverse this process to take down the ladder. Remember that you will be walking backwards, so check for obstacles in your path before starting. Also be careful to lower the ladder slowly so that you can keep it under control and prevent its falling on you.

Set up and placement of a ladder is also important in safe use. Straight ladders should be positioned so that the horizontal distance between the foot of the ladder and the support against which it is placed is equal to one-fourth the height of the ladder at the top point of support. This is demonstrated in the following illustration.



Safe Work Practices

Work: **Landscaping Equipment**

Practice:

1. Use care and caution when working around landscaping equipment.
2. Do not use landscaping tools unless trained and experienced in the tool's use and operation.
3. Before starting a power tool, make sure all guards are in place.
4. Check fuel and oil levels of a four-cycle engine. Do not fill the gasoline tank while an engine is running. Do not smoke during refueling.
5. Wear either safety glasses or goggles while operating lawn mowers, weed eaters, and blowers.
6. Wear appropriate hearing protection while operating powered landscaping equipment.
7. Before mowing an area, inspect the area and remove stones, branches, and other foreign objects from the area.
8. Stand clear of grass discharge chute, and keep hands and feet from under blade housing when starting a mower.
9. When mowing on a steep slope, never mow up and down. Mow across the face of the slope.
10. Use extreme caution when pulling a mower and only pull for a short distance.
11. Ensure that other personnel and equipment (such as cars) are kept at a safe distance.
12. While mowing, pay attention to your job at all times.
13. Do not leave the engine running while a power tool stands unattended. Shut off push movers before moving across pavement, gravel, or dirt. On riding mowers, disengage the blade drive when moving across pavement, gravel, or dirt.
14. Stop the engine and disconnect spark plug wire before working on a mower.

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15. Do not dismantle or tie off the "dead man's control" on lawn mowers. Do not disable automatic shut off bars or other automatic shut off devices on power mowers.

Safe Work Practices

Work: **Lead-based Pain Abatement**

Practice:

1. If lead-based paint is suspected, or if personnel are unsure if lead-based paint exists in an area' notify the Safety Coordinator to conduct testing.

2. If the Safety Coordinator confirms lead-based paint, any abatement procedures must be performed by a qualified contractor.

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Safe Work Practices

Work: **Lifting/Rigging/Hoisting**

Practice:

1. Use care and caution when lifting heavy tools and equipment.
2. Inspect loads for size, shape, and weight.
3. Inspect loads for metal slivers, wooden slivers, jagged edges, burrs, and rough, or slippery surfaces.
4. Clean oil, grease or other slippery materials off loads before lifting.
5. Clean oil, grease, or other slippery items off hands and gloves before lifting heavy loads.
6. Wear leather or other approved gloves when lifting heavy loads. Back supports are available from the Safety Storage Room for lifting heavy loads.
7. Get as close to the load as possible to size it up.
8. Position feet far enough apart to obtain good balance and stability.
9. Secure a good footing.
10. Grip load firmly.
11. Keep fingers away from danger points where fingers could become crushed or pinched.
12. Bend legs approximately ninety (90) degrees at the knees.
13. Keep back straight.

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14. Lift load gradually by straightening legs at the knees while keeping the back straight. **Never** bend over and lift with the back.

15. Keep the load close to your body.

16. Do not lift more than can be comfortably handled.

17. Face the direction in which the load is carried.

18. Do not carry a load that blocks your vision.

19. Do not carry heavy loads up or down stairs.

20. Summon assistance when a load is determined to be too heavy or bulky for one (1) person to carry.

21. Lower a load gradually by bending legs at the knees while keeping the back straight. **Never** lower the load by bending with the back.

22. Coordinate the joint lifting or lowering of loads with the other personnel involved in the lift.

23. Balance a load when lifting with two (2) or more people or when using a lifting eye, crane, etc.

24. Know the maximum load that a lifting device is able to safely lift. Ensure that the load to be lifted is less than the maximum load prescribed in the lifting device. **Never** exceed the rated load capacity of lifting equipment. Remember the portion of the lifting system that

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has the lowest prescribed load determines the maximum load that can be safely lifted with the system.

25. Attach hooks, hoists, cables, etc. to lifting devices before each use to ensure that they are structurally sound.

26. Inspect cables, slings, chain fall, and other lifting devices before each use to ensure that they are structurally sound.

27. Check and recheck cables, slings, etc. used for rigging to ensure that loads are secured.

28. Lift straight up when using a crane or hoist. **Never** lift with cables at an angle.

29. Stand clear of suspended loads. **Never** stand or have a portion of the body under a suspended load. Watch and caution others concerning the lifting operation. Do not allow bystanders to get under or close the load.

30. Ensure that all lifting devices are load tested and that the proper documentation is maintained.

31. Ensure that all cranes, trolleys, means, etc. are marked with the correctly rated load capacity.

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Safe Work Practices

Work: **Lighting**

Practice:

1. Adequate lighting for areas used in nighttime operations such as galleries, equipment rooms, and outside areas is essential. If unsure about whether adequate lighting exists in an area contact your supervisor or the Safety Coordinator.

2. Adequate lighting is required for structures without windows or below ground level.

3. Ensure that all walkways, passageways, exits, and stairways are illuminated.

4. When lighting is required in potentially flammable atmospheres (such as sewers, wet walls, or tanks), use only explosion proof flashlights and drop lights with heavy duty insulated cords.

5. Ensure monthly and annual testing of emergency and EXIT lighting is completed and documented in the (CMMS). See NFPA 101.

6. Ensure building identification letter/number signs are illuminated during the hours of darkness.

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Safe Work Practices

Work: **Manholes**

Practice:

1. Use care and caution when working manholes.
2. Do not smoke, light open flames, or produce sparks in the immediate vicinity of open manholes.
3. If possible, before removing manhole or entrance covers, test the atmosphere inside the manhole by using a remote sampling probe or aspirator. If the lower explosive limit is above 10% inside the manhole, do not remove the cover.
4. Use specifically designed devices to open manhole covers and heavy hatch covers.
5. Lift manhole covers and heavy hatch covers with legs. **Never** lift with the back muscles.
6. Lay removed manhole covers and heavy hatch covers flat on the ground several feet away from the opening. Do not attempt to balance the cover on its end.
7. When manhole or entrance covers are removed, the opening must be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and protect each employee working in the space from foreign objects entering the space.
8. Use barricades and/or warning devices to direct traffic abound open manholes.
9. Follow AlexRenew's Confined Space Entry Program and safety procedures before entering any manhole.
10. Have at least two (2) staff members present before entering a manhole: one (1) person to enter the manhole and one (1) person (an attendant) in the clear to observe in the event of an emergency. One (1) of the persons must be a "Qualified Person" as defined in AlexRenew's Confined Space Entry Program. This person bears the responsibility of completing the Confined Space Entry Permit. **Never** enter a manhole unattended.
11. Wear protective clothing in a manhole.
12. Use ladders or work seats to access manholes. The structural soundness and support ability of the manhole steps/stairs have been questionable.
13. Take proper safety precautions when using ladders in a manhole.

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14. Use a safety harness and lifeline when entering a vertical entry manhole unless the life line created an entanglement hazards.

15. Watch out for slippery footing in a manhole.

16. Do not hand-carry tools and/or equipment while climbing up or down a ladder into a manhole.

17. Raise or lower tools and/or equipment into a manhole using a bucket, sling or rope.

18. Use only explosion proof portable lighting in a manhole.

19. Avoid using electrical tools in or near water. Never stand in water when using electrical tools. A CGFI receptacle must be used in damp areas.

20. Constant ventilation is required when performing “hot work” within a manhole.

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Safe Work Practices

Work: **Methanol**

Practice:

1. AlexRenew personnel must be trained and instructed on the use and handling of methanol, methanol equipment, and methanol emergency response (refer to the Material Safety Data Sheet)

2. Use extreme care and caution when handling methanol.

3. Smoking and open flames should never be present around methanol.

4. Potential hazards involving exposure to and use of methanol are listed in the (MSDS) and are as follows:
   - Inhalation: Inhalation of high airborne concentration can irritate mucus membranes, cause headaches, sleepiness, nausea, confusion, loss of consciousness, digestive, and visual disturbances, and death.
   - Ingestion: May cause blindness or death.
   - Skin Contact: Mild irritant, repeated exposure may cause dermal irritation, dryness, and cracking of the skin.
   - Eye Contact: Vapor is a mild irritant; direct contact can cause irritation, tearing, and burning.

5. When handling methanol follow the Personal Protective Equipment (PPE) guidelines indicated on the (MSDS) sheet which includes:
   - Rubber or neoprene gloves
   - Impervious boots
   - Apron or coveralls
   - Rain coat
   - Chemical safety goggles in areas of unusual exposure
   - Full face shield

6. Ensure all storage containers of methanol are labeled.
   Flammable Liquid 8 with number 1230" centered.

   NFPA 704 sign
   Blue-3
   Red-3
   Yellow-0.

7. All employees should know the location and operation of emergency eyewash stations and emergency showers in the areas where work is to be performed. Accidental spillage on clothing or skin is to be flushed immediately with large volumes of water and appropriate first aid sought.

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Methanol Feed Building and Storage Tanks

1. Keep the methanol feed building doors closed.

2. Inspect the building and area once per shift.

3. If the leak or spill occurs, determine the source and take immediate preventive action. Notify the Operations Shift Supervisor at once. Follow the procedures in AlexRenew's Emergency Action Plan.

4. Wash small spills of less than ten (10) gallons with water form a hose bib to the floor drains.

5. Large spills, more than ten (10) gallons, require larger amounts of water and added precautions.
    a. Call the city fire department and notify them that you are going to activate the fire suppression system to dilute the spill. Inform them that the chemical will be washed into our process that be diluted.
    b. Shut off the foam concentration system by closing the water supply valve at the Foam Concentrate Storage Tank.
    c. Manually open the deluge valve for the area that needs flushing.

6. When cleaning up methanol, ventilate the area.

First Aid

1. If methanol is accidentally ingested, get immediate medical help.

2. If a person is overcome by methanol, remove them to fresh air. Get medical attention immediately.

3. For skin contact remove contaminated clothing. Wash under shower with soap and water for fifteen (15) minutes. Seek medical attention if irritation occurs.

4. If methanol gets into the eyes, immediately flush the eyes with running water for at least fifteen (15) minutes. Get medical attention immediately.

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Save Work Practices

Work: **Muriatic Acid**

Practice:

1. AlexRenew personnel must be trained and instructed on the use and handling of muriatic acid, muriatic acid equipment, and muriatic acid emergency response (refer to the Material Safety Data Sheet).

2. Use extreme care and caution when handling muriatic acid.

3. When handling muriatic acid, follow the Personal Protective Equipment (PPE) guidelines indicated on the MSDS sheet which may include:
   - Rubber boots
   - Chemical gloves
   - Face shield, splash-proof safety goggles
   - Impervious/ chemical resistant coveralls and jacket

4. When handling muriatic acid in a laboratory wear, goggles, face shield, lab coat or apron, and gloves. A vent hood needs to be used.

5. When using or handling muriatic acid in a confined space, see Safe Work Practices for Ceramic Diffuser Cleaning.

6. Ensure all storage containers of muriatic acid are labeled. Ensure the correct NFPA label in on the container i.e. Blue-3, Red-0, Yellow-0.

7. When diluting muriatic acid always add the muriatic acid to water slowly and cautiously, preferably no faster than the muriatic acid is consumed by the reaction.

8. Store muriatic acid in a corrosion proof area, isolate muriatic acid from incompatible materials, such as metals and do not store muriatic acid near oxidizing materials.

9. Report any problems of leaks of muriatic acid to your supervisor immediately.

10. For large release of muriatic acid, self-contained breathing apparatus (SCBA) and full protective clothing is required for trained employees to cleanup call 9-911.

11. When cleaning up muriatic acid, ventilate area and neutralize spill with soda ash or lime. With a clean shovel, carefully place material into a clean, dry containers and cover container. Flush spill area with water.

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12. If muriatic acid is accidentally ingested, **GET IMMEDIATE MEDICAL HELP. DO NOT INDUCE VIMITING**. If victim is conscious, give large quantities of water or milk.

13. If a person is overcome by muriatic acid, remove them to fresh air. Get medical attention immediately. If person is not breathing, give artificial respiration using a barrier mask to prevent contamination.

14. If muriatic acid is accidentally spilled on the skin, immediately flush the skin with running water. If muriatic acid in on clothing, remove clothing and wash clothing before clothing is worn again. Get medical attention immediately if skin irritation has occurred.

15. If muriatic acid gets into the eyes, immediately flush eyes with running water for at least fifteen (15) minutes. Get medical attention immediately.

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Safe Work Practices

Work: **Office and Clerical Work**

Practice:

1. Walk at all times. Use care in passing through doorways.
2. Reading while walking around the office or a corridor is inviting trouble. Keep your head up and watch the path of travel.
3. Use office aisles instead of short-cuts between desks whenever possible.
4. Ensure extension cords are not frayed and plugs on cords are of the three (3) prong type.
5. Keep all electrical cords for office machinery and telephones away from office passageways.
6. Set wastepaper baskets away from passageways so employees do not stumble over or step into the wastepaper baskets.
7. When carrying bulky objects, be sure your vision is not blocked.
8. Stairways and passageways should not be obstructed by any type of equipment, furniture, tools, or other articles.
9. Exercise special care on stairways. Always use handrails.
10. Slippery floors caused by water or other spilled liquids are dangerous and should be wiped dry immediately.
11. Report worn, slippery, or broken flooring immediately.
12. Do not open more than one (1) filing cabinet drawer at a time. Opening more than one (1) drawer at a time can cause the fling cabinet to tip over and injure the employee.
13. Avoid overloading or creating unbalanced lockers. Exercise caution in stacking items on the top shelves of lockers.
14. When lifting items in the office, lift with knees and not with the back. **Never** bend over; always squat down instead.
15. **Never** attempt electrical or mechanical repairs of office equipment. All repairs should be made by trained service technicians.

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16. Use approved stepladders or step stools, not office furniture, to reach high inaccessible places.

17. Ensure that chairs and all other office furnishings are in good repair before using any office furnishings.

18. Report immediately any odors, smoke, excessive heat, or other sign of burning around electrical equipment, cords, or outlets.

19. Place heaters away from people and combustible material.

20. Keep all desk, table, and file drawers, overhead cabinet doors or covers closed when not in use.

21. Use caution in storing knives, scissors, or razor blades. Always use a razor blade with approved safety holder. **Never** store loose razor blades, knives, or pins in desk drawers.

22. Dispose of broken glass in separate receptacles rather than receptacles reserved for wastepaper.

23. Paper cutter blades should always be down and locked when not in use.

24. Avoid carrying sharp, pointed pencils in pockets. A broken point could become embedded under the skin.

25. Avoid paper cuts and scratches by picking up paper at the corners.

26. in case of fire, notify supervisors and warn all other people in the area calmly and without causing panic. Pull the nearest fire alarm pull-station and call 9-911. See further instructions in AlexRenew's Emergency Action Plan.

27. Know the location of all fire extinguishers.

28. Know emergency evacuation routs and exits. Do not use the elevators.

29. Ensure that office areas are ergonomically safe.

30. Observe all safety precautions in other departments and work areas such as maintenance, operations, etc.

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Safe Work Practices

Work: **Personal Hygiene and Safety**

Practice:

1. Practice good personal hygiene and safety to guard against occupational related diseases.
2. Wear clothing that protects the arms and legs.
3. Avoid loose fitting clothing that could get caught in moving equipment.
4. Keep shirts tucked into pants.
5. Change work clothes on a regular basis and more often when clothing becomes extremely wet.
6. Those staff members that must launder work clothes should launder them separately from regular family wash. After washing work clothes, clean the inside of washing machine with a disinfectant cleaner such as Lysol.
7. Wear steel toed shoes. See Note: See Safety SOP, Administration: Safety Rules: Safety Equipment: Safety Shoes.
8. Wear appropriate protective gloves whenever working in contact with wastewater, sludge or chemicals. Always check gloves for leaks before starting work and consult the material safety data sheets to assure the correct gloves are used when handling chemicals.
9. Wear protective gloves whenever hands have cuts or broken skin. Never allow wastewater, sludge, or chemicals to come in contact with cuts or broken skin.
10. Do not place fingers into the mouth, nose, ears, or eyes while handling wastewater, sludge, or chemicals.
11. Wash hands with disinfectant soap after handling wastewater, sludge, or chemicals.
12. Wash hands with disinfectant soap before eating, smoking, or going to the lavatory.
13. Wear appropriate dust masks to avoid breathing fumes, dust, or vapors.
14. Drink potable water only from drinking fountains. **Never** drink water from a hose bib or sill cock.
15. Shower after each day's work.

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16. Change bandages covering wounds frequently and ensure that wounds are kept clean.
17. Use the correct protective equipment needed for each job or task.
18. Do not sacrifice safety for speed.
19. Do not run on the plant site.
20. Do not play practical jokes or contribute to rowdiness and horseplay on the plant site.
21. Store food and drinks only in refrigerators and spaces so designated
22. Do not eat except in areas designated for eating.

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Safe Work Practices

Work: **Power Tools, Hand Tools, and Portable Power Equipment**

Practice:

1. Use care and caution when handling power tool, hand tools, and portable power equipment.
2. Do not use tools and equipment unless trained and experienced in their use and operation.
3. Use the proper tools and equipment for the required job.
4. Inspect tools carefully before using them and report any tool that appears unsafe.
5. Use care and caution when using tools with sharp points or edges such as saws, knives, chisels, punches, and screwdrivers. Hand tools of this type are not to be set down on surfaces where they can be tripped over, stepped on, or bumped.
6. Use equipment guards and other safety devices at all times when operating tools and equipment. **Never** bypass a safety guard or switch.
7. Use safety glasses/goggles and face shields as appropriate.
8. Inspect tools on a regular basis and before each use to ensure that the tools and equipment are in good working order.
9. Keep tools and equipment clean and in good operating condition. **Never** use broken hand tools and power tools.
10. Replace work-out tools and equipment.
11. use only grounded or double-insulated electrical tools.
12. never use electrical tools in or near water without a circuit ground fault interrupter. Never stand in water when using an electrical tool or equipment.
13. Have frayed or broken electrical cords repaired immediately.
14. Shut off gasoline or diesel engines before refueling.
15. Direct exhaust fumes from gasoline or diesel engines away from work areas.
16. Apply working force toward the body to minimize the chance of injury if the hand tools slips.

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17. Ensure tool handles are fitted properly to tools and free of grease and other slippery substances.

18. Dress cold chisels, hammers, drift pins, and other tools that tend to mushroom at the impact area. As soon as they begin to mushroom, check a slight radius (approximately 3/16 inch or 4.7 mm) and grind down the edge of the head.

19. Do not carry sharp edges or pointed tools in clothing pockets.

20. Do not use defective wrenches, such as cracked boxed wrenches, open-end and adjustable wrenches with sprung jaws or pipe wrenches with dull teeth.

21. Do not apply hand tools to moving machinery except tools designed for the purpose and necessary in the operation.

22. Do not throw tools and material from one employee to another or from one location to another. Use a suitable container to raise or lower small equipment or tools between elevations.

23. Do not place tools on ladders, stairs, balconies, or other elevated places from which they might create a stumbling hazard or become dislodged and fall.

24. Inspect and test power tools before each use.

25. When using an electric drill, secure the work by using a clamp, jig, or vise. **Never** hold small work in the hand while drilling. Use adequate eye protection and be sure to remove the chuck key or drift before starting the drill.

26. Wear a face-shield, goggles, or face-shield and safety glasses whenever using a grinding wheel. **Never** grind on the side of a grinding wheels unless the wheel is designed for side grinding.

27. Prior to installing new abrasive wheels on grinders, perform a "ring" test on the wheel. The ring test is conducted by striking the wheel with a metal object (small hammer) and listening to hear a sharp metallic ring. If a dull sound is heard instead, the wheel may be defective; replace it with a wheel that passes the ring test.

28. Run new abrasive wheels for at least one (1) minute before applying work to the wheel surface.

29. Before starting a pedestal grinder, ensure that the work areas is clear and that the wheel rotates freely. Adjust the tool rest to within $1/8^{th}$ of an inch from the grinding wheel. After starting the grinder, stand to one side while the wheel reaches speed.

Safe Work Practices

Work: **Rotating Equipment**

Practice:

1. Use care and caution when working around rotating equipment.
2. Turn it off; lock it and tag-it out at the main circuit breaker. Attempt to re-start all mechanical equipment after lockout and before beginning work on the rotating parts of the equipment. (Follow AlexRenew Lockout/Tagout procedures.)
3. Install and maintain guards around all rotating shafts, couplings, belt drives gears, sprockets, pulleys, chains, conveyors, and other moving parts that are hazardous to personnel. If assistance is required in determining hazardous equipment, contact your supervisor.
4. Before removing mechanical guards: turn it off, lick it and tag-it out at the main circuit breaker. Then attempt to start it (Follow AlexRenew's Lockout/Tagout procedures.)
5. Do not operate mechanical equipment if guards are removed. (See special exceptions listed in AlexRenew's Lockout/Tagout Program.)
6. Avoid loose-fitting clothing that could get caught in moving parts.
7. Keep shirts tucked in pants.
8. If guards need to be adjusted, ensure equipment is not running or cycling before adjustments are make.

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Safe Work Practices

Work: **Safety Chains (Install and use automatic gates whenever possible)**

Practice:

1. Protect the top of all ladders and dangerous stairwells with removable safety chains.
2. Ensure that all safety chains used will support a minimum weight of two hundred (200) pounds and allow less than three (3) inches of deviation.
3. Ensure that all safety chains used remain rust free and in good condition.
4. Avoid placing weight on safety chains. **Never** lean against safety chains.
5. Ensure that all safety chains remain taut.

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Safe Work Practices

Work: **Sample Collection**

Practice:

1. Use care and caution when obtaining samples.
2. Use sample poles, dippers, buckets, etc. to collect samples from open tanks and channels.
3. Avoid mending down over tanks to collect samples. **Never** climb over guardrails or chains to collect samples.
4. Watch out for slippery footing when collecting samples.
5. Watch out for open manholes, hatches, and grating when collecting samples.
6. Ensure that nighttime lighting at the plan site is sufficient for collecting samples.
7. Wear protective gloves when working in contact with chemicals as required by the applicable MSDS sheet. Consult material safety data sheets for information on the correct gloves to wear while handling chemicals. **Never** touch chemicals with bare hands.
8. D not place fingers, into the mouth, nose, ears, or eyes while handling wastewater, sludge, or chemicals.
9. Wash hands with a disinfectant soap after handling wastewater, sludge or chemicals.
10. Do not smoke or eat while working around treatment tanks and equipment.

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Safe Work Practices

Work: **Sodium Hydroxide**

Practice:

1. AlexRenew personnel must be trained and instructed on the use and handling of sodium hydroxide, sodium hydroxide equipment, and sodium hydroxide emergency response procedures. Employees should refer to the Material Safety Data Sheet. (MSDS)

2. Use extreme care and caution when handling sodium hydroxide.

Note: **Always add caustic to water not water to caustic.**

3. Ensure sodium hydroxide containers are properly labeled. MFPA label should read as follows:

Health	3
Flammability	0
Reactivity	1
Special Hazard	Corrosive

4. When handling sodium hydroxide or servicing the sodium hydroxide system follow the Personal Protective Equipment (PPE) guidelines indicated on the MSDS sheep which may include rubber boots, gloves, face shield, splash-proof safety goggles, impervious coveralls and jacket. Compatible materials for personal protective equipment include butyl rubber, natural rubber, neoprene, and nitrile rubber.

5. Ensure that an eyewash/shower or hose with potable water is in the immediate area before working on any sodium hydroxide system or with sodium hydroxide.

6. Before putting the sodium hydroxide system into service, check to assure that the following valves are OPEN:

   Desired feet point valves
   Pump suction valves
   Pump discharge valves

Note: **If unsure about the location of the above valves, check process schematic.**

7. Before putting the sodium hydroxide system into service, check to assure that the following valves are CLOSED:

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Feed line valves from storage tanks not in use.
Pump isolation valves for chemical feed pumps are not in use.
Pump discharge valves along feed line are not in use from the chemical pump to feed point.
Calibration cylinder valves should also be closed.

Note: If unsure about the location of the above valves, check process schematic.

8. When putting the sodium hydroxide system into service, remember that only one (1) storage tank can supply sodium hydroxide to the feed pumps at any given time.

9. Flush the chemical feed system for sodium hydroxide if it is to be out of service for a prolonged period of time.

10. When taking the chemical feed system for sodium hydroxide out of service, **never** close a valve while a pump is running. Sever damage or injury could result.

11. Periodically inspect the sodium hydroxide chemical feed system for leaks.

12. Inspect the tank man-ways gaskets and bolts at least annually.

13. Report any problems or leaks of sodium hydroxide to the shift supervisors immediately.

Note: When there a sizable leak/spill of sodium hydroxide it must be reported using AlexRenew's Incident Record and Resolution Report Form.

14. Call the fire department at 9-911 if a person is incapacitated by sodium hydroxide.

15. Trained personnel should apply CPR immediately to a person that has been incapacitated by sodium hydroxide and is not breathing. (**CAUTION:** Administration of mouth to mouth resuscitation may expose the first aid provider to the chemical within the victim's lungs or vomit- use a barrier mask if readily available.) Summon medical attention as soon as possible.

16. Place a person who does not have difficulty breathing and is contaminated with a sodium hydroxide into a shower. Remove clothing under running water and wash all portions of body that were exposed to sodium hydroxide. Get medical attention immediately.

17. Flush eyes contaminated with sodium hydroxide immediately with running water for at least fifteen (15) minutes, occasionally lifting the eyelids.

18. If sodium hydroxide is accidentally ingested, drink large quantities of water immediately to dilute. DO NOT VOMIT. Get medical attention immediately.

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Safe Work Practices

Work: **Sodium Hypochlorite (NaOCl)**

Practice:

1. Before handling sodium hypochlorite ensure staff are all thoroughly familiar with the Material Safety Data Sheet. (MSDS)

2. Plant personnel must be trained and instructed on the proper use and handling of sodium hypochlorite, sodium hypochlorite equipment, and sodium hypochlorite emergency response procedures.

3. Use care and caution when handling sodium hypochlorite.

4. Ensure sodium hypochlorite containers are properly labeled. NFPA label should read as follows:

Health	3
Flammability	0
Reactivity	1
Special Hazard	Corrosive

5. In case of fire, avoid using foam-type fire extinguishers on or around sodium hypochlorite. The acid portion of foam can cause hypochlorite to break down.

6. Use to oldest supply of sodium hypochlorite first.

7. Avoid fumes from spilled or exposed liquid, dilute copiously, ventilate, and be prepared to use respiratory protection if needed. Acid contamination will produce very irritation fumes similar to chlorine gas.

8. When handling sodium hypochlorite or servicing the sodium hypochlorite system follow the Personal Protective Equipment (PPE) guidelines indicated on the MSDS sheet which may include rubber boots, gloves, face shield, splash-proof safety goggles, impervious coveralls and jacket. Compatible materials for personal protective equipment include butyl rubber, natural rubber, neoprene, and nitrile rubber.

9. Do not sore sodium hypochlorite adjacent to chemicals that may be incompatible with hypochlorite if spillage occurs.

10. When handling sodium hypochlorite, ensure that an emergency eyewash/deluge shower or hose is available. First test the shower or hose to make sure it is in good proper working condition before beginning to handle any chemical.

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11. If a leak or spill occurs, attempt to contain and recover if possible. Spills can be neutralized with bisulfate or ferrous salt solutions. Caution is advised. Some irritating fumes may be generated. Keep on the alkaline side and dilute with large quantities of water.

12. DO NOT use combustible materials such as paper or sawdust to absorb hypochlorite.

13. Avoid contamination with heavy metals, which act as catalyst, reducing agents, organics, ammonia, or acids.

14. DO NOT allow spilled material to enter streams; it may seriously affect aquatic life.

15. Comply with NPDES permits and label directions in the disposal of sodium hypochlorite waste materials.

16. Check and correct all sodium hypochlorite leaks.

17. Ensure that the following general precautions for handling a sodium hypochlorite solution are followed:
    a. Keep containers closed.
    b. Ensure adequate ventilation.
    c. Avoid breathing fumes
    d. Avoid contact with eyes, skin, and clothing
    e. Wash thoroughly after handling.

Note: Flush eyes contaminated with sodium hypochlorite immediately with running water for at least fifteen (15) minutes, occasionally lifting the eyelids. Get medical attention immediately.

If a person does not have difficulty breathing and is contaminated with sodium hypochlorite, place them in a shower. Remove clothing under running water and wash all portions of body that were exposed to sodium hypochlorite. Get medical attention immediately.

18. If accidentally ingested, drink water, or milk and obtain medical attention. DO NOT USE BAKING SODA or ACIDIC ANIDOTES.

19. Call 9-911 for the rescue squad if a person is incapacitated by sodium hypochlorite.

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Safe Work Practices

Work: **Sulfuric Acid (H2SO4)**

Practice:

1. Before handling sulfuric acid ensure all staff are thoroughly familiar with the Material Safety Data Sheet. (MSDS)

2. Plant personnel *must* be trained and instructed on the proper use and handling of sulfuric acid equipment and sulfuric acid emergency response procedures.

3. Use care and caution when handling sulfuric acid.

4. Ensure sulfuric acid containers are properly labeled. NFPA label should read as follows:

Health	3
Flammability	0
Reactivity	2

5. In case of fire, avoid using water on the sulfuric acid. The water will generate heat. Use water to cool sulfuric acid containers.

6. Avoid fumes from spilled or exposed liquid, dilute copiously, ventilate, and be prepared to use respiratory protection if needed. Acid contamination will produce hydrogen gas.

7. Avoid fumes from spilled or exposed liquid, dilute copiously, ventilate, and be prepared to use respiratory protection if needed. Acid contamination will produce hydrogen gas.

8. When handling sulfuric acid or servicing the sulfuric acid system follow the Personal Protective Equipment (PPE) guidelines indicated on the MSDC sheet which may include rubber boots, gloves, face shield, splash-proof safety goggles, impervious coveralls and jacket. Compatible materials for personal protective equipment include butyl rubber, natural rubber, neoprene, and nitrile rubber.

9. Do not store sulfuric acid adjacent to chemicals that by be incompatible sulfuric acid If spillage occurs.

10. When handling sulfuric acid, ensure that an emergency eyewash/deluge shower or hose is available. First test the shower or hose to make sure it is in good proper working condition before beginning to handle any chemical.

11. If a leak or spill occurs, attempt to contain and recover if possible. Spills can be neutralized with lime or soda ash. Caution is advised; some irritating fumes may be generated.

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12. Avoid contamination with heavy metals, which act as catalysts, reducing agents, organics, ammonia, or acids.

13. DO NOT allow spilled material to enter streams. It may seriously affect aquatic life.

14. Comply with NPDES permits and label directions in the disposal or sulfuric acid waste materials.

15. Check and correct all sulfuric acid leaks.

16. Ensure that the following general precautions for handling a sulfuric acid solution are followed:
    a. Keep containers closed.
    b. Ensure adequate ventilation.
    c. Avoid breathing fumes
    d. Avoid contact with eyes, skin, and clothing.
    e. Wash thoroughly after handling.

Note: Flush eyes contaminated with sulfuric acid immediately with funning water for at least fifteen (15) minutes, occasionally lifting the eyelids. Get medical attention immediately.

If a person does not have difficulty breathing and is contaminated with sulfuric acid, place them in a shower. Remove clothing under running water and wash all portions of body that were exposed to sulfuric acid. Get medical attention immediately.

17. If accidentally ingested, drink water and obtain medical attention.

18. Call 9-911 for the rescue squad if a person is incapacitated by sulfuric acid.

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Safe Work Practices

Work: **Traffic**

Practice:

1. Provide Adequate protection to and from vehicle and pedestrian traffic when working in or adjacent to public and plant roads.
2. Use traffic signs, cones, and barricades to direct traffic safely around the work site.
3. Ensure that a certified flagman is directing traffic in congested or highly traveled areas.
4. Park work vehicles to minimize hazards to oncoming traffic.
5. Park work vehicles between the work site and oncoming traffic whenever possible.
6. Ensure that all employees working in congested or highly traveled areas wear orange, yellow, strong yellow-green or fluorescent vests so that they can easily be seen by passing motorists.
7. Observe traffic safety rules and always look for traffic before crossing a street or stepping out for the work site.

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Safe Work Practices

Work: **Traffic Control Devices and Uses at Construction Sites**

Practice:

1. Only employee possessing a valid Flagger Certification Card may control traffic for construction or maintenance operation in accordance with the Virginia Department of Transportation Regulations.

2. Flaggers are required to carry their Flagger Certification Card with them at a construction or maintenance site. Flaggers must ear a bright reflective vest, hard hat, steel toed shoes, and long pants.

3. Personnel working in or near a road must also wear bright reflective vests, hard hats, and steel-toed shoes.

4. Consult VDOT manual, Virginia Work Area Protection Manual for correct procedures for traffic control situations.

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Safe Work Practices

Work: **Vehicular and Operating Equipment** **(See additional guidance in the Motor Vehicle Safety Policy – Policy E-7 of the Personnel Policies and Procedures Manual.)**

Practice:

1. Do not use vehicles or operate equipment unless authorized.
2. Do not use vehicles or operate equipment unless trained and experienced in heir use and operation.
3. Observe all legal rules and regulations when operating vehicles or equipment.
4. Report any ticketed violations occurring while operating vehicles or equipment to your supervisor immediately.
5. Always wear seat belts and use other safety devices whenever operating vehicles or equipment.
6. DO NOT EXCEED POSTED SPEED LIMITS.
7. Do not horseplay or fool around in vehicles or other equipment.
8. Turn off engines whenever leaving vehicles or other equipment.
9. Turn off engines whenever leaving or other equipment.
10. Set the hand break and place a manual transmission in gear whenever parking vehicles or other equipment.
11. Report any malfunctioning vehicle or other equipment immediately to your supervisor.
12. You must possess a license or be certified for all vehicles that you operate. For example, use of a forklift requires a Forklift training and certification operation of a truck, car or van requires a valid state drivers license.
13. Do not use a cell phone while driving an AlexRenew vehicle.

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Safe Work Practices

Work: **Ventilation**

Practice:

1. Adequate ventilation is required to support life, to prevent the formation of explosive gas mixtures, and to maintain a safe working environment.
2. Check ventilating hoods periodically for airflow.
3. Use portable blowers when working in manholes, sumps, wet wells, and normally submerged areas that have been drained for access, any areas with potential oxygen deficiency, hazardous atmosphere, or explosive atmosphere.
4. Before starting work in a potentially hazardous atmosphere or confined space, follow all Confined Space Entry guidelines.
5. Keep ventilation equipment in operation while working.
6. Ensure, when welding or painting that adequate ventilation is provided.

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Safe Work Practice

Work: **Welding and Cutting**

Practice:

1. Use care and caution when welding to avoid electric shock, burns, radiant energy including "flash," toxic fumes, fires, and explosions.
2. Wear approved welding goggles or helmets (hoods) with the proper shade lens. Wear proper eye protection to guard against flying particles when the helmet is raised.
3. Use ear protection when welding or cutting overhead.
4. Wear gauntlet gloves while welding or cutting.
5. Ensure outer clothes are free of oil or grease. Fasten clothing closely around the neck, wrist, and ankles. Wear protective leathers.
6. Make sure the work area is well ventilated when solvents are in use, or while brazing, cutting, or welding cadmium, beryllium, chromium, zinc, brass, bronze, or galvanized or lead-coated material.
7. Do not weld or cut in dust or hazardous areas until the areas have been ventilated sufficiently and monitored with a direct reading instrument for combustible gasses.
8. Place safety signs, shields, or barricades around welding jobs, for self-protection and the protection of others from the direct rays of electrical arc, welding flame, or splatter.
9. Prevent hot metal from falling on to other individuals, combustible materials, or equipment when welding or cutting in elevated positions.
10. Cool down hot material before leaving the work site.
11. When welding near energized high voltage circuits, use a solid protective barrier or other means to prevent the ionized air or metallic vapor produced by welding from causing a flashover to the electrical circuit.
12. Protect flammable material that cannot be removed from the danger of ignition from welding with a shield of noncombustible fire-resistant material, or take measures to confine the heat, sparks, and slag.

13. Make sure suitable fire extinguisher is available during any cutting or welding procedures. In addition, hot work activities required that an assigned fully trained Fire Watch be present when conducting hot work activity for 30 minutes after completion of the work to make sure the smoldering fires have not been started. (See Hot Work Permit Safe Work Practices.

14. Store glass cylinders upright, with the protective cap on chained in a secure position.

15. Oxygen cylinders in storage shall be separated from fuel (gas cylinders) or combustible materials a minimum distance of 20 feet. Unless they are separated by a noncombustible barrier at least 5-feet high having a fire rating of at least one-half hour.

16. **Never** allow grease or oil to come in contact with gas cylinders, regulators, valves, or connections of gas welding equipment. Do not direct oxygen at oil surfaces or greasy cloths, or into tanks or containers of combustible or flammable liquids.

17. When making gas welding equipment connections, do not use pipe tread sealant, gaskets, or lubricants.

18. Check gas connections and fitting with soap standard testing solutions BEFORE using gas welding and/or cutting equipment.

19. Use of gas torch within an enclosed space requires that the cylinder valves (located outside of the enclosed space) be shut off and the torch and hose be removed from the enclosed space when the torch is not being used.

20. Use only an approved striker. DO NOT use matches or cigarette lighters to light a torch. DO NOT use heat from hot work to light a torch.

21. Install flash guard check valves between hoses and oxygen-acetylene torches to prevent a flashback in the hose.

22. If a flashback occurs in a torch, shut off the oxygen valve first, then close the acetylene valve. Check torch, tip, hose, and gas pressure before relighting the torch.

23. DO NOT use oxygen or acetylene through a torch or other device having a shit-off valve unless the cylinder is equipped with a pressure regulator.

24. Avoid leaving welding electrodes unattended. If electrode holders must be left unattended, REMOVE electrodes and place or protect the holders so holders cannot make electrical contact with other individuals or conducting objects.

25. Turn off equipment (and torches) when stopping work or leaving the work areas. A LIGHTED TORCH CANNOT BE LEFT UNATTENDED.

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26. Keep hoses, cables, and other equipment clear of passageways, ladders, and stairs.

27. Keep welding equipment, electrode holders, ground clamps, cables, etc. in safe working condition. Do not repair gas-welding hoses with tape.

28. Leave the valve wrench in place on the valve when a fuel cylinder is in use to that the valve can be turned off quickly in an emergency. To permit quick closing of valves, DO NOT open valves on acetylene cylinders more than one and a half turns. Acetylene pressure should **NEVER** exceed 15 psig. Open valves on oxygen cylinders all the way.

29. Welding within a confined space requires constant forced-air ventilation, a fire watch,

    and constant monitoring of the atmosphere with an approved direct reading instrument. Follow ALL precautions as stated in the AlexRenew's Confined Space Entry Program.

30. If welding or torch cutting in a confined space is stopped for some time, special precautions should be taken. For example, the power of arc welding or cutting units should be disconnected and the electrode should be removed from the holder. The torch valves of the welding or cutting units should be turned off. The gas supply should be shut off at the point outside the confined space. If possible, always remove the torch and hose form the confine space.

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Section III
Safety Programs

Introduction

The Safety Manager shall develop, adopt, and implement safety programs that comply with specific OSHA requirements. These safety programs will also meet all specific AlexRenew health and safety needs.

A. The following are approved AlexRenew Safety Programs that are a part of this Safety SOP:

1. Arc Flash and Electrical Safety

    a) The arc flash and electrical safety standard operating procedures (SOPs) are intended to ensure electrical safety of qualified and authorized employees working on or near energized live parts of electrical equipment at the Alexandria Renew Enterprises (AlexRenew).

2. Asbestos Awareness Program

    a) The Asbestos Awareness Program was developed to comply with OSHA (29 CFR 1910.1001) and EPA requirement. The purpose of this program is to protect the health of all employees and significantly reduce exposure to asbestos.

3. Bloodborne Pathogens Exposure Control Plan

    a) The Bloodborne Pathogens Exposure Control Plan was developed to comply with OSHA Standard (29 CFR 1910.1030) concerning on-the-job exposure to bloodborne pathogens. The purpose of this program is to provide procedures for employees to protect themselves for exposure and to detail exposure –related remedial actions.

3. Chemical Hygiene Plan

    a) The Chemical Hygiene Plan was developed to comply with OSHA Standard (29 CFR 1910.1450) concerning Occupational Exposure to Hazardous Chemicals in Laboratories. The purpose of this plan is to give laboratory workers the same high level of protection provided to all employees who work with hazardous chemicals.

4. Confined Space Entry Program

    a) The Confined Space Entry Program was developed to comply with OSHA Standard (29 CFR 1910.146) concerning confined space entry. The purpose of this program is to protect the health of all employees and significantly reduce accidental injury and death associated with entering and working in confined spaces.

5. Contractor Safety Plan – Responsibility and Requirements

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a) The Contractor Safety Plan was developed to insure all Contractors work is performed with the same priority and emphasis on Health, Safety and Environment (HSE) protection as AlexRenew practices for their own employees and facilities.
b) It requires all Contractors to comply with all applicable local, State, and Federal health, safety, and environmental laws, regulations, and ordinances.
b) This Safety Plan specifies requirements that may exceed local, State, and Federal laws, including OSHA standards or the Contractors' normal HSE procedures.

6 Control of Hazardous Energy (Lockout/Tagout Program)

a) The Lockout/Tagout program was developed to comply with OSHA Standard (1910.145) The purpose of this program is to prevent accidents to personnel by rendering equipment inoperative while repairs or adjustments are being made.

7. Cranes and Hoist

i. The purpose of the Crane and Hoist program is to comply with OSHA Standard (29 CFR 1910.174)

Many types of cranes, hoists, and rigging devices are used at the Alexandria Renew Enterprises (AlexRenew) for lifting and moving materials. AlexRenew's policy it to maintain a safe workplace for its employees; therefore, it cannot be overemphasized that only qualified individuals shall operate these devices. The safety rules and guidance in this SOP apply to all operations at AlexRenew that involve the use of cranes and hoists installed in or attached to buildings and to all AlexRenew staff, supplement labor, and subcontractor personnel who use such devices.

8. Ergonomics Program

a. The Ergonomics Program was developed to comply with OSHA's General Duty Clause, that is, to provide a safe work place for all employees. Specifically, the Ergonomics Program is designed to protect employees involved in repetitive motion work, such as computer keyboarding.

9. Fall Protection Program

a. The Fall Program was developed to comply with OSHA Standards (29 CFR 1910.120 and 29 CFR 1926.500). The purpose of the program is to set forth requirement and criteria for fall protection for AlexRenew staff.

The effectiveness of the written fall protection procedures depends upon the active support and involvement of all employees who work with procedures to ensure that work with fall protection is carried out safely to minimize the possibility of injury or harm to out employees.

These written fall protection procedures establish uniform requirements designed to ensure that fall protection operation, and practices are communicated to and understood by the affected employees. These requirements are also designed to ensure that procedures are in place to safeguard the health and safety of all AlexRenew staff.

10. Hazard Communication Program (Also known as the Right to know Program)

a) The Hazard Communication Program was developed to comply with OSHA Standards (29 CFR 1910.12000). The OSHA Hazard Communication Standard was promulgated to ensure that all chemical in the work place would be evaluated and that information regarding the hazards of these chemicals would be communicated to employers and employees.

11. Hearing Conservation Program

a) The Hearing Conservation Program was developed to comply with OSHA Standard (29 CFR 1910.12000). The purpose of this program is to protect the health of employees and to reduce the potential for hearing loss of employees working in the areas where they are exposed to noise.

12 Mosquito Control Program

a) This program was developed as a proactive measure to provide guidance to AlexRenew staff and contractors in an effort to reduce the population and growth of mosquitoes. The program also gives guidance on preventive measure that can be taken to prevent mosquito bites using insect repellents stored in the Warehouse.

13 Scaffolding Program

a) The Scaffolding Program was developed to comply with OSHA Standard (29 CFR 1910.28) requirements for scaffolding. The purpose of this program is to make employees aware of unsafe conditions, proper construction, use, placement, and care of scaffolding.

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SCAFFOLDING PROGRAM

(29 CFR 1910.28)

ALEXANDRIA RENEW ENTERPRISES

1/15/2020

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Scaffolding Program

I. INTRODUCTION

The Occupational Safety and Health Administration (OSHA) regulates scaffolding used in both General Industry and Construction. Moreover, AlexRenew has a responsibility to instruct each employee who may use scaffolding in the recognition and avoidance of unsafe conditions, proper construction, use, placement, and care. This program was designed to reduce falls from elevations.

The Scaffolding Safety Program covers general safe work practices and requirements. AlexRenew uses different types of scaffolding systems or may rent scaffolding. Hands-on training detailing the proper erection and care of scaffolding must be conducted in-house.

II. DEFINITIONS:

Handrail -	A single bar or pipe supported on brackets from a wall or partition to provide a continuous handhold for persons
Railing -	A vertical barrier erected along exposed sides of stairways and platforms to prevent falls of persons. The top member of railing usually serves as a handrail.
Ladder -	A ladder is an appliance usually consisting of two side rails joined at regular intervals by cross-pieces called steps, rungs, or cleats, on which a person may step in ascending or descending.
Wood characteristics -	Wood characteristics are distinguishing features which by their extent and number determine the quality of a piece of wood.
Wood irregularities -	Wood irregularities are natural characteristics in or on wood that may lower its durability, strength, or utility.
Cross grain -	Cross grain (slope of grain) is a deviation of the fiber direction from a line parallel to the sides of the piece.

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Knot -	A knot is a branch or limb, imbedded in the tree and cut through in the process of lumber manufacture, classified according to size, quality, and occurrence. The size of the knot is determined as the average diameter on the surface of the piece.
Bearer -	A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.
Brace -	A tie that holds one scaffold member in a fixed position with respect to another member.
Coupler -	A device for locking together the component parts of a tubular metal scaffold. The material used for the couplers shall be of a structural type, such as a drop-forged steel, malleable iron, or structural grade aluminum. The use of gray cast iron is prohibited.
Double pole or independent pole scaffold -	A scaffold supported from the base by a double row of uprights, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers, and diagonal bracing.
Guardrail -	A rail secured to uprights and erected along the exposed sides and ends of platforms.
Heavy duty scaffold -	A scaffold designed and constructed to carry a working load not to exceed 75 pounds per square foot.
Ladder jack scaffold -	A light duty scaffold supported by brackets attached to ladders.
Light duty scaffold -	A scaffold designed and constructed to carry a working load not to exceed 25 pounds per square foot.
Manually propelled mobile Scaffold -	A portable rolling scaffold supported by casters.
Maximum intended load -	The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.

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Medium duty scaffold - A scaffold designed and constructed to carry a working load not to exceed 50 pounds per square foot.

Mid-rail - A rail approximately midway between the guardrail and platform, used when required, and secured to the uprights erected along the exposed sides and ends of platforms.

Outrigger scaffold - A scaffold supported by outriggers or thrustouts projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside of such a building or structure.

Runne - The lengthwise horizontal bracing or bearing members or both.

Scaffold - Any temporary elevated platform and its supporting structure used for supporting workmen or materials or both.

Single-point adjustable

suspension scaffold - A manually or power-operated unit designed for light duty use, supported by a single wire rope from an overhead support so arranged and operated as to permit the raising or lowering of the platform to desired working positions.

Single pole scaffold - Platforms resting on putlogs or crossbeams, the outside ends of which are supported on ledgers secured to a single row of posts or uprights and the inner ends of which are supported on or in a wall.

Toeboard - A barrier secured along the sides and ends of a platform, to guard against the falling of material.

Working load - Load imposed by men, materials, and equipment.

e work platform.

III. GENERAL SAFETY REQUIREMENTS FOR ERECTING SCAFFOLDING

Competent Persons shall oversee the erection and dismantling of scaffolding systems. A competent person is a person who has read the manufacturer's

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directions and who has had training on the AlexRenew's Scaffolding Safety Program. A competent person is defined as a person who is capable of identifying existing and predictable hazards in the surroundings or work conditions which are hazardous and who has authorization to take prompt corrective measures to eliminate the hazard.

A. FOOTING/ANCHORAGE - Scaffolds and their components shall be capable of supporting without failure at least four times the maximum intended load. Moreover, unstable objects such as barrels, boxes, loose brick, or concrete blocks cannot be used to support scaffolds or planks. Scaffolds and other devices mentioned or described in this section shall be maintained in safe condition. Scaffolds shall not be altered or moved horizontally while they are in use or occupied.

B GUARDRAILS/TOE - Scaffolds erected greater than ten feet in height above the ground floor shall have guardrails and toeboards on all open sides and ends. Scaffolds that are four to ten feet in height and have a minimum horizontal dimension, in either direction, of less than 45 inches, must have guardrails and toeboards on all open sides and ends. The standard size for guardrails is 42 inches in height with a midrail at 21 inches. The standard size for toeboards is four inches. If guardrails and toeboards are not used, employees working on the scaffold must wear fall protection. Fall protection includes a full body harness tied off to an anchor point (eye bolt, pipe, etc.) that will support 5,000 pounds or 2,500 pounds if a Self Retracting Life Line (SRL) is a component of the fall protection system. Moreover, body harnesses and lanyards must meet Occupational Safety and Health Administration regulations and the American National Standard Institute standards. While erecting and dismantling scaffolding, employees may have to wear fall protection. For example, if employees are in the process of erecting or dismantling scaffolding and the handrails and toeboards are removed and the scaffolding is greater than ten feet above the ground floor, fall protection is necessary.

C. SCREENS - Where persons are required to work or pass under an in-use scaffold, a screen between the toe board and the guardrail, extending along the entire opening must be installed. Moreover, this screen must be #18-inch gauge U.S. Standard wire 1/2-inch mesh, or the equivalent.

D. TIMBER SCAFFOLD FRAMING - All load carrying timber members of scaffold framing shall be a minimum of 1500 fiber (Stress Grade)

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construction grade lumber.

E. PLANKING - When prefabricated, manufactured planking (flooring) is not used, all wood planking must be Scaffold Grade or equivalent. Southern Pine (SPIB) classification D165 and D172 need to be used. Furthermore, the scaffold plank must be scaffold grade solid-sawn lumber with a nominal size of 2X10 inches or larger. All planking of platforms must be overlapped at least 12 inches or secured from movement. Scaffold planks must extend over their end supports not less than 6 inches and not more than 12 inches. Platforms need to be tightly planked for the full width of the scaffold except for the necessary entrance opening.

F. LOADING - Never allow more than three employees on the same scaffold board at a time. Moreover, the maximum permissible span for 1/4 X 9 inch or wider plank of full thickness is 4 feet with an average loading of 50 pounds per square foot (PSF).

G. ACCESS LADDER - An access ladder or equivalent safe access must be provided for scaffolding. Always check your scaffolding, some types of scaffolding have the access ladder built in, however, other types you must provide a ladder for safe access. The ladder must be located so that when in use it will not tip the scaffold. A landing platform must be provided at intervals not to exceed 35 feet.

H. SWAYING/DISPLACEMENT - The poles, legs, or uprights of scaffolds must be securely and rigidly braced to prevent swaying and displacement. All pole scaffolds need to be securely guyed or tied to the building or structure. If the height and length of a scaffolding system exceeds 25 feet, the scaffold needs to be secured at intervals not greater than 25 feet vertically and horizontally.

J. SLIPPERY CONDITIONS - Slippery conditions, such as, petroleum or chemical spills (oil, polymer, etc.) need to be quickly eliminated.

K. CROSS BRACING - Cross bracing must be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically. Furthermore, the bracing shall extend diagonally from the inner and outer runners upward to the next outer and inner runners.

L. ROLLING PLATFORMS - All tools and materials need to be secured or removed from the platform before the platform is moved. Most importantly NO Employee is to be on a rolling platform when they are being moved.

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M. TAG LINES/HOIST ARMS - A tag-line should be used to keep the material that is hoisted from damaging the scaffold assembly. Hoist arms may be used to lift scaffold components or light materials to the work platform. However, hoist arms will often introduce an overturning force to the scaffold assembly that must be compensated for by tying the scaffolding system to the structure.

N OUTRIGGER SCAFFOLDS OUTRIGGER Outrigger beams must not extend more than six feet beyond the face of the building. The inboard end of outrigger beams, measured from the fulcrum point to anchorage point, cannot be not less than 1/2 times the outboard end in length. The beams must rest on edge, the sides must be plumb, and the edges must be horizontal. The fulcrum point of the beam must rest on a secure bearing at least six inches in each horizontal dimension. The beam must be secured in place against movement and must be securely braced at the fulcrum point against tipping. The inboard ends of outrigger beams must be securely anchored either by means of struts bearing against sills in contact with the over-head beams or ceiling, or by means of tension members secured to the floor joists underfoot, or by both if necessary. The inboard ends of outrigger beams need to be secured against tipping and the entire supporting structure must be securely braced in both directions to prevent any horizontal movement. If outrigger scaffolds are designed by a registered professional engineer, the scaffold must be constructed and erected in accordance with such design. If outrigger scaffolds are not designed by a professional engineer, they need to be constructed and erected in accordance with Table 1.

TABLE 1

Maximum Scaffold Load	**Light Duty 25 p.s.f.**	**Medium Duty 50 p.s.f.**
Outrigger size	2X10 inch	3X10 inch
Maximum Outrigger	10 ft.	6 ft
Spacing	0 inch	0 inch
Planking	2X10 inch	2X10 inch
Guardrail	2X4 inch	2X4 inch
Guardrail uprights	2X4 inch	2X4 inch
Toeboards	4 inch(minimum)	4 inch(minimum)

O. DESIGN - Stationary and rolling scaffolding should be erected and

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dismantled according to the manufacturer's instructions. If stationary scaffolding is to exceed 125 feet in height it must be designed by a registered professional engineer. If rolling scaffolding is to exceed 60 feet in height it must be designed by a professional engineer. When tube and coupler scaffolding is used no dissimilar metals can be used together.

P. WEATHER - Working outside on scaffolding during periods of high winds or storms is prohibited. Scaffolds covered with ice or snow are also strictly prohibited.

IV. GUIDELINES FOR PURCHASING AND RENTING SCAFFOLDING

A. Manufactured scaffolding that is purchased or rented must meet the Occupational Safety and Health Administration's Scaffolding Standard 1926.451 and 1910.28.

B. Manufactured scaffolding that is purchased or rented must be capable of supporting at least four times the designed working load. If wire or fiber rope is used in scaffold supports they must be capable of supporting at least six times the designed working load.

C. Scaffolding systems that are broken, bent, rusted, altered, or have other structural defects may not be used purchased or rented.

V. INSPECTION OF SCAFFOLDING

A. Rented scaffolding systems need to be inspected before renting by a competent person. If the rented system is found to be broken, bent, excessively rusted, altered, or have other structural defects it should not be rented.

B. Scaffolding must be inspected before use by a competent person. If the scaffolding system is found to be broken, bent, excessively rusted, altered, or have other structural defects it should not be used until repaired. Scaffolds must be repaired by a qualified vender. Extra parts, such as, clamps, coupling pins, cross braces etc., that are purchased for a scaffolding system must be manufacture approved parts for that scaffolding system.

C. Chemicals often will destroy or damage scaffolding parts. If strong acids or acid based chemicals are spilled on a scaffolding system, they may severely damage or destroy it. Scaffolding that has had chemical damage must be evaluated. If parts are found to be damaged or destroyed the scaffolding system must not be used until it the parts are replaced or

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repaired.

D. If scaffolds are erected for more than one day, they will need to be inspected daily by a competent person.

E. Competent persons must document all scaffold inspections. These inspections may be documented and saved using a log book type ledger.

F. The inspection log book must be at the Team's Leaders Office or work site and available for inspection by the Safety Coordinator, or regulatory agencies.

G. Supervisors are responsible for insuring the inspection log book is kept and all necessary scaffolding inspections are performed.

VI. TRAINING

A. The Safety Coordinator will train employees on the Authorities Scaffolding Safety Program and general safe work practices while using scaffolding.

B. Supervisors are responsible for training their employees on how to properly erect and dismantle scaffolding.

C. Team Leaders are responsible for designating competent persons within their Team. Competent persons are designated on the basis of training and experience.

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SECTION 01 55 00
VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 SUMMARY

A. Work specified in this Section includes but is not limited to requirements for vehicular access and parking.

1.02 VEHICLE ACCESS AND PARKING

A. Construction workers are prohibited from on-street parking within the City of Alexandria.

B. The Contractor may utilize portions of the assigned laydown/staging area at Building G, as shown on the drawings, for privately owned vehicle parking (POV) and marked company vehicles as needed to transport materials, equipment, and personnel needed to complete the Work and as approved by Owner.

C. The Contractor must control vehicle parking within the limits of the Work as shown on the Drawings to preclude interference with traffic or parking, access by emergency vehicles, Owner's operations, or other construction operations.

D. The Contractor must confine construction traffic to designated haul routes as shown on the Drawings.

E. Owner reserves the right to declare parking conditions unsafe or unacceptable and to require the contractor to make necessary on-the- spot changes at no cost to the Owner.

F. If Contractor's, subcontractors,' or vendors'/suppliers' employees, or any other Contractor invitee violates these Contract requirements, the Contractor must immediately remedy the violation upon Owner notification to the Contractor.

G. The Contractor shall be responsible for providing transportation to and from the job site for project personnel parking in any offsite areas.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

3.01 PARKING AREAS

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

3.02 VEHICULAR TRAFFIC

A. No public or private road shall be closed. Ensure the least possible obstruction to traffic.

B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.

C. All posted speed limits on Site must be obeyed.

D. Construction traffic on plant roads will be limited to stabilized road surfaces to the greatest extent practical, as shown on the Drawings.

E. Whenever it is necessary to cross or obstruct onsite roads, driveways, and walks, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.

F. When flaggers and guards are required by the traffic plan included in the drawings, the Contractor's Traffic Routing Plan as approved by the Engineer, or when deemed necessary for safety, furnish them with approved hardhats, orange wearing apparel, and other regulation traffic control devices.

G. Coordinate traffic routing with that of others working in same or adjacent areas. Other contracts will be under construction during portions of the duration of this project.

3.03 PLANT ROADS

A. Unless otherwise approved by the Owner, plant roads shall remain open at all times with at least one 12-foot traffic lane, unless specifically indicated otherwise on the Drawings.

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This section covers Work necessary for stabilization of soil to prevent erosion during construction and land disturbing activities. The minimum areas requiring soil erosion and sediment control measures are indicated on Drawings. Owner reserves right to modify use, location, and quantities of soil erosion and sediment control measures based on activities of Contractor.

B. The City of Alexandria is the regulatory authority for temporary erosion and sediment control and post-construction stormwater management.

C. The Virginia regulatory threshold for requiring an erosion control plan to be approved and a land disturbance permit issued is 2,500 square feet of bare soil exposed by the project.

1. Contractor is responsible to not exceed this threshold with the cumulative impacts of construction and temporary staging areas on existing lawn. Storage of materials on vegetated areas for longer than 7 days is considered land disturbance requiring vegetated restoration.
2. Storage on existing asphalt, concrete, or gravel areas is not counted as ground disturbance.
3. If additional temporary storage areas are needed, coordinate with the Owner regarding potential to use other hard surfaced areas on the AlexRenew campus. If no other areas are available, the Contractor is responsible to provide offsite storage at no additional cost to the Owner.

D. The site will be subject to inspection by City of Alexandria. Although a temporary Erosion and Sediment Control Plan and Land Disturbance Permit are not required, the Contractor remains under obligation to prevent sediment escape from the limits of disturbance, and to comply with actions required by a City erosion control inspector.

E. Contractor is responsible for any enforcement fines or remedial actions required by the City for noncompliance with erosion and sediment control or damage to existing trees.

F. North of the CPT building is a depressed vegetated area which is an existing rain garden bioretention stormwater management facility. No land disturbance is permitted in the rain garden or ground directly draining into it.

G. Responsible Land Disturber: The Contractor must obtain and maintain Responsible Land Disturber Certification from the Virginia DEQ throughout the duration of the project. Certification training materials and test are available online.

1.02 REFERENCES

A. Activities shall conform to the Virginia Stormwater Management Handbook Version 1.1. In the event of a conflict, the more stringent requirement shall apply.

1.03 SYSTEM DESCRIPTION

A. Erosion and Sediment Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases during demolition and construction period.

B. Responsible Land Disturber (RLD):

1. The contractor staff with responsibility to ensure compliance of erosion control implementation and the authority to stop work if noncompliance occurs must have Responsible Land Disturber certification from the Virginia Department of Environmental Quality.
2. RLD shall also inspect all areas disturbed by construction activities, all onsite erosion and sediment control BMPs, all stormwater discharge points, and all temporarily stabilized inactive sites at least once per week.

C. Pollution Control: Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations. Implement the following BMPs when applicable:

1. Written spill prevention and response procedures.
2. Employee training on spill prevention and proper disposal procedures.
3. Material delivery and storage controls.
4. Covered storage areas for waste and supplies.

D. If Owner or City inspector orders the Work suspended, continue to control erosion, pollution, and runoff during the shutdown.

E. Nothing in this section shall relieve Contractor from complying with other Contract requirements.

1.04 SUBMITTALS

A. Action Submittals:

1. Temporary erosion control plan/sketch consistent with the temporary Storage Area Plan submittal required by Specification 01 50 52, Contractor Facilities.
   a. Plan must include:
      1) Perimeter erosion control practices such as C-PCM-04 Silt Fence or C-PCM-05 Compost Filter Sock in accordance with Virginia Stormwater Management Handbook Version 1.1.
      2) C-SCM-04 Inlet Protection at the existing storm inlet in pavement southwest of the CPT building.
2. Revegetation Work Plan.

PART 2 PRODUCTS

2.01 INLET PROTECTION

A. Inlet Protection: VDOT approved materials list (http://www.virginiadot.org/business/resources/bu-mat-ALwlab.pdf).

VDOT Approved Materials List Standard EC-6, Inlet Protection Approved List for Synthetic Materials Substitution	
Grate Drop Inlet	
Silt Sack, Grate Gator	ACF Environmental 2831 Cardwell Road Richmond, VA 23234 800-223-9021, 804-743-7779 Fax
Dandy Bag, Dandy Sack	Dandy Products P.O. Box 1680 Powell, OH 800-591-2284
Note: Other synthetic erosion control product substitutions may be made with the approval of the Engineer at no additional cost to the Owner.	

2.02 GEOTEXTILE

A. Geotextiles shall consist only of long chain polymeric fibers or yarns formed into a stable network such that the fibers or yarns retain their position relative to each other during handling, placement, and design service life. At least 95 percent by weight of the material shall be polyolefins or polyesters. The material shall be free from defects or tears. Geotextile shall also be free of any treatment or coating which might adversely alter its hydraulic or physical properties after installation.

B. Geotextile product for separation between soil and temporary gravel surfacing for staging area must meet the requirements for Subgrade Separation Fabric on the VDOT approved materials list.

PART 3 EXECUTION

3.01 PREPARATION

A. Issuance of City of Alexandria permits is required prior to starting earth disturbing activities.

B. Inlet Protection: Install inlet protection below or above, or as a prefabricated cover at each inlet grate, in accordance with the product chosen and as approved by the City Inspector. Install inlet protection devices prior to beginning demolition or earthwork activities.

C. Silt Fence or Compost Filter Sock: Provide in accordance with Virginia Stormwater Management Handbook Version 1.1.

3.02 MAINTENANCE

A. Maintain erosion and sediment control BMPs so they properly perform their function until city inspector determines they are no longer needed.

B. Construction activities must avoid or minimize excavation and creation of bare ground during wet weather.

C. Initiate repair or replacement of damaged erosion and sediment control BMPs immediately, and work completed by end of next work day.

D. Within 24 hours, remediate any significant sediment that has left construction site. Investigate cause of the sediment release and implement steps to prevent a recurrence of discharge within same 24 hours.

3.03 REMOVAL

A. When city inspector determines that an erosion control BMP is no longer required, remove BMP and all associated hardware from the Project limits.

B. Permanently stabilize all bare and disturbed soil after removal of erosion and sediment control BMPs and temporary staging area.

3.04 LAWN RESTORATION

A. Remediate soil compaction with core aeration.

B. Provide C-SSM-10 Permanent Seeding and C-SSM-11 Mulching in accordance with Virginia Stormwater Management Handbook Version 1.1.

END OF SECTION

SECTION 01 61 00
COMMON PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 DEFINITIONS

A. Products:

1. New items for incorporation in the Work, whether purchased by Contractor or Owner for the Project, or taken from previously purchased stock, and may also include existing materials or components required for reuse.
2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.
3. Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.02 CODES

A. Provide systems, equipment, and components that comply with the following codes as adopted by the City of Alexandria.

1. 2018 Virginia Construction Code (IBC).
2. 2018 Virginia Energy Conservation Code (with ASHRAE 90.1-2010).
3. 2018 Virginia Mechanical Code (International Mechanical Code).
4. 2018 Virginia Plumbing Code (International Plumbing Code).
5. 2020 National Electrical Code.
6. 2018 Virginia Existing Building Code (International Existing Building Code).
7. 2018 Virginia Fire Code (International Fire Code).

1.03 DESIGN REQUIREMENTS

A. Where Contractor design is specified, design of installation, systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of 2018 Virginia Construction Code (VCC) and 2015 International Building Code (IBC) by International Code Council as modified by VCC.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 0 degrees F to 120 degrees F.

1.05 PREPARATION FOR SHIPMENT

A. When practical, factory assemble products. Mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.

B. Whenever possible, order equipment and materials in bulk quantities to minimize excess packaging. Avoid over-ordering of material quantities.

C. The Contractor is encouraged to request that equipment and material suppliers ship items with minimal and/or recyclable packaging products without sacrificing adequate protection for all items. Submit documentation to the Engineer that such requests have been made.

D. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.

E. Recycle, reuse, or return packaging items to the greatest extent practical.

F. Extra Materials, Special Tools, Test Equipment, and Expendables:

1. Furnish as required by individual Specifications.
2. Schedule:
    a. Ensure that shipment and delivery occurs concurrent with shipment of associated equipment.
    b. Transfer to Owner shall occur immediately subsequent to Contractor’s acceptance of equipment from Supplier.
3. Packaging and Shipment:
    a. Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.
    b. Prominently displayed on each package, the following:
        1) Manufacturer’s part nomenclature and number, consistent with Operation and Maintenance Manual identification system.

2) Applicable equipment description.
3) Quantity of parts in package.
4) Equipment manufacturer.

4. Deliver materials to Site. Notify Construction Manager upon arrival for transfer of materials.
5. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to Owner.

G. Request a minimum 7-day advance notice of shipment from manufacturer. Upon receipt of manufacturer's advance notice of shipment, promptly notify Engineer of anticipated date and place of equipment arrival.

H. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual Specification sections.

1.06 DELIVERY AND INSPECTION

A. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at Site. Schedule deliveries in succession to avoid vehicle idling on site.

B. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.

C. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.

D. Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products at Site. Promptly inspect for completeness and evidence of damage during shipment.

E. Remove damaged products from Site and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

1.07 HANDLING, STORAGE, AND PROTECTION

A. Handle and store products in accordance with manufacturer's written instructions and in a manner to prevent damage. Store in approved storage yards or sheds provided in accordance with Section 01 50 52, Contractor Facilities. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.

B. Manufacturer's instructions for material requiring special handling, storage, or protection shall be provided prior to delivery of material.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to ensure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.

D. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 degrees F. Protect electrical, instrumentation, and control products, and insulate against moisture, water, and dust damage. Connect and operate continuously space heaters furnished in electrical equipment.

E. Store fabricated products above ground on blocking or skids, and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

F. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.

G. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.

H. Hazardous Materials: Prevent contamination of personnel, storage area, and Site. Meet requirements of product specification, codes, and manufacturer's instructions.

1.08 SUBSTITUTE AND "OR-EQUAL" PRODUCTS

A. Any substitute and "or-equal" products must meet the requirements of the General Conditions, the Specification sections, and as set forth herein.

B. Submit each proposed substitute or "or-equal" item/method. Include all supporting data to allow Engineer's review in accordance with Section 01 33 00, Submittal Procedures, and as follows:

1. With consideration of the additional evaluation time necessary for Engineer's review of such items, indicate for each item the review status; either substitute or "or-equal."
2. Contractor, in indicating the review status of the proposed item, acknowledges that the time shown for Engineer's review on the current accepted schedule is sufficient only to allow Engineer to accomplish review for the status indicated and not sufficient to perform both a review for "or-equal" status and a subsequent review for substitute status on the same product.

3. Engineer shall require the Contractor to provide the specified product and may return unreviewed those submissions which fall into one or more of the following categories:
   a. Not shown on the current accepted schedule.
   b. Review status differs from that indicated on the accepted list unless previously approved in writing by Engineer.
   c. Not in accordance with paragraph 7.05 of the General Conditions and as specified herein.
   d. Incomplete.
   e. Uncertified.

C. Disposition of Substitute Item/Method:

1. Accepted: Engineer will evidence such acceptance by recommendation of a Change Order for Contractor and Owner execution. Such Change Order will accompany Engineer's evaluation and acceptance of Contractor's proposed substitute.
2. Rejected:
   a. If a hard copy submittal was provided:
      1) One copy retained by Engineer.
      2) Remaining copies returned to Contractor with a commentary by Engineer.
   b. Contractor shall provide item specified in Contract Documents.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide manufacturer's standard materials suitable for service conditions, unless otherwise specified in the individual Specifications.

B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.

C. Like items of products furnished and installed in the Work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.

D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

E. Provide interchangeable components of the same manufacturer, for similar components, unless otherwise specified.

F. Equipment, Components, Systems, and Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, state, and local health and safety regulations.

G. Regulatory Requirement: Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.

H. Safety Guards: Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated 1/2-inch mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.

I. Authority Having Jurisdiction (AHJ):

1. Provide the Work in accordance with NFPA 70, National Electrical Code (NEC). Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.
2. Materials and equipment manufactured within the scope of standards published by Underwriters Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.

J. Equipment Finish:

1. Provide manufacturer’s standard finish and color, except where specific color is indicated.
2. If manufacturer has no standard color, provide equipment with gray finish as approved by Owner and Engineer.

K. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts as required for maintenance.

L. Lubricant: Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, startup, and operation until final acceptance by Owner.

2.02 FABRICATION AND MANUFACTURE

A. General:

1. Manufacture parts to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
3. Design structural members for anticipated shock and vibratory loads.
4. Use 1/4-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
5. Modify standard products as necessary to meet performance Specifications.

B. Lubrication System:

1. Require no more than weekly attention during continuous operation.
2. Convenient and accessible; oil drains with bronze or stainless steel valves and fill-plugs easily accessible from the normal operating area or platform. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.
3. Provide constant-level oilers or oil level indicators for oil lubrication systems.
4. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.03 SOURCE QUALITY CONTROL

A. Where Specifications call for factory testing to be witnessed by Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.

B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).

C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 EXECUTION

3.01 INSPECTION

A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing such effects. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment. Delays to the Work

resulting from material or equipment damage that necessitates procurement of new products will be considered delays within Contractor's control.

3.02 INSTALLATION

A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.

B. No shimming between machined surfaces is allowed.

C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.

D. Repaint painted surfaces that are damaged prior to equipment acceptance.

E. Do not cut or notch any structural member or building surface without specific approval of Engineer.

F. Handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's instructions, and as may be specified. Retain a copy of manufacturers' instruction at Site, available for review at all times.

G. For material and equipment specifically indicated or specified to be reused in the Work:

1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
2. Arrange for transportation, storage, and handling of products that require offsite storage, restoration, or renovation. Include costs for such Work in the Contract Price.
3. Reused or relocated shall mean reused or relocated in-kind. The Contractor shall be responsible for all mechanical, electrical, instrumentation and any other Work required to make the relocated or reused material or equipment completely functional in all respects to the original installation.

3.03 FIELD FINISHING

A. In accordance with Section 09 90 00, Painting and Coating, and individual Specification sections.

3.04 ADJUSTMENT AND CLEANING

A. Perform required adjustments, tests, operation checks, and other startup activities.

3.05 LUBRICANTS

A. Fill lubricant reservoirs and replace consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

END OF SECTION

SECTION 01 71 16
BENEFICIAL OCCUPANCY

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall provide all personnel, services and materials required to furnish the Work in full operating order. This is to include system start-up and operation, training of operators and mechanics, furnishing all service manuals, delivery of spare parts, and system commissioning and testing to ensure correct operation and function. This also includes demonstration and verification of all project related items. Where other facilities are to be closed and their functions are to be performed at or by the project then the project must be capable of providing all services required.

1. Work shall be sufficiently complete so that the Owner can fully occupy and utilize the Work or designated portion thereof for the use for which it is intended.
2. Beneficial Occupancy is independent of other non-project circumstances, which could prevent The Owner from occupying, and operating the project.
3. Beneficial Occupancy does not require completion of demobilization, nonimpacting change orders, Directives or The Owner-supplied items/services, minor punch list items, landscaping and general cleanup to the extent that such items do not interfere with occupancy and use of the project by The Owner.

1.02 CONTRACT WORK ESSENTIAL FOR BENEFICIAL OCCUPANCY

A. All paved areas, pavement, curbs, sidewalks, walkways, stairs, ladders, elevators, and platforms required for access to the facility shall be complete in accordance with Contract requirements.

B. Final cleanup, as required for occupation of areas of the facility and access thereto, shall be completed.

C. All facility systems, including but not limited to, all process equipment, HVAC, plumbing, utilities, power, fire protection and communication systems, must be operated by the Contractor for a full continuous period of 15 calendar days, or to a duration agreed to by Owner, per the accepted Systems Operation Plan (specified herein). If, during this period any system or part of a system fails, the problems shall be corrected expeditiously, and the required 15 calendar days will start from zero again.

D. All training of The Owner's personnel in the proper operation and maintenance of systems, equipment, and similar items (except training which is specifically

dependent upon testing over full range of process parameters) shall have been provided as required, prior to the start of the 15 calendar days of continuous operation.

E. The Contractor shall operate and maintain systems during the 15-day test continuously on a 24 hour per day basis using qualified personnel. System operating parameters shall be established by The Owner. The Contractor shall regularly consult and coordinate his operations during the testing period with The Owner. Any changes in status or performance of equipment being tested shall immediately be reported to the Engineer.

1.03 BENEFICIAL OCCUPANCY PROCESS

A. Ten (10) days, or duration agreed to by Owner, in advance of his planned facility systems operation the Contractor shall submit:

1. Qualifications resume of the lead engineer, for the facility systems operation.
2. Systems Operation Plan to address, in detail, how the required acceptance testing, startup, operator training and beneficial occupancy of the work are to be accomplished.

B. The Contractor shall prepare and submit seven (7) days in advance, a notice stating the anticipated date for the initiation of the Owner agreed to duration of the facility system operation.

C. The Notice shall certify that:

1. Work has been completed in accordance with the Contract Documents;
2. Equipment and systems have been tested and certified by manufacturers as required, and are operational;
3. Work specified in this Section is completed and ready for Beneficial Occupancy inspection and testing.
4. All submittals referenced in this Section have been made.

D. The Engineer will make an inspection to verify status of completion and shall verify that Work has been inspected for compliance with the Contract Documents.

E. Should the Engineer determine that the Work is incomplete or defective:

1. The Engineer promptly will so notify the Contractor, in writing, listing the incomplete or defective work.
2. The Contractor shall remedy the deficiencies promptly, and notify the Engineer when ready for re-inspection.

F. When the Engineer determines that the Work is acceptable under the Contract Documents, the Contractor may proceed with the Owner agreed to timed-duration

systems operation. Upon successful completion of 15-day of continuous operation the Engineer will issue a Certificate of Beneficial Occupancy.

1.04 SUBMITTALS

A. Beneficial Occupancy submittals include, but are not necessarily limited to:

1. Manufacturer's/suppliers certifications that the equipment is ready for start-up
2. Operation and Maintenance data and all Service Manuals, for items so listed in other pertinent sections of these specifications, and for other items when so directed by the Engineer;
3. Warranties and Bonds;
4. Keys and Keying Schedule;
5. Spare parts and materials extra stock;
6. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:
   a. Certificates of Inspection;
   b. Certificates of Occupancy;
7. Evidence of payment and release of liens of suppliers and subcontractors;
8. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays;
9. Certificates of Insurance for products and completed operations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOTE USED)

END OF SECTION

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SECTION 01 74 00
CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. Work specified in this Section includes but is not limited to the following:

1. Furnish all labor, materials, equipment and appurtenances required to provide cleaning as shown and specified.
2. Cleaning includes:
   a. Cleaning during construction.
   b. Final cleaning of project and related site work.

1.02 CLEANING DURING CONSTRUCTION

A. In accordance with General Conditions, as may be specified in other Specification sections, and as required herein.

B. Control accumulation of waste materials and rubbish; periodically dispose of offsite.

C. Keep site and construction areas clean on a weekly basis.

D. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.

1.03 FINAL CLEANING

A. Execute cleaning prior to inspection for Substantial Completion of the Work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use materials which will not create hazards to health or property, and which will not damage surfaces.

B. Use only materials and methods recommended by manufacturer of material being cleaned.

C. All cleaning products utilized in the Contractor's field office and at the construction site must be certified by Green Seal.

PART 3 EXECUTION

3.01 CLEANING

A. In addition to removal of debris and cleaning specified in other sections, clean interior and exterior exposed to view surfaces.

B. Remove waste, foreign matter, and debris from roofs, gutters, areaways, and drainage systems.

C. Cleaning During Construction:

1. Execute periodic cleaning to keep building, site, and adjacent properties free of accumulations of waste materials, debris, rubbish, and windblown debris resulting from construction operations.
2. Prior to Substantial Completion remove construction tools, scaffolding, equipment, machinery, and surplus materials.
3. Broom clean and vacuum interior areas prior to start of surface finishing, and continue cleaning to eliminate dust. Protect existing and new equipment from construction dust and dust cleaning operations and per manufacturer's recommendations.
4. Schedule cleaning operations such that dust and other contaminants will not fall on, or adhere to, wet or newly coated surfaces.
5. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing space.
6. Store volatile wastes in covered metal containers and remove from premises daily. Prevent accumulation of waste which creates hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.
7. Do not throw materials from heights.
8. Open free-fall chutes not permitted. Terminate closed chutes into appropriate containers with lids.
9. Collect and remove waste materials, debris, and rubbish from site weekly until execution of final cleaning and dispose off-site in lawful manner.
10. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
11. Do not burn or bury rubbish and waste materials on Project site. Do not dispose of volatile wastes or hazardous materials such as mineral spirits, oil, or paint thinner in storm or sanitary drains. Do not dispose of wastes into streams or waterways.
12. Maintain cleaning until Final Completion.

D. Final Cleaning: In addition to cleaning during construction, prior to Substantial Completion provide the following:

1. Remove temporary protection and labels not required to remain.
2. Clean finishes free of dust, stains, films and other foreign substances.
3. Clean transparent and glossy materials to a polished condition; remove foreign substances. Polish reflective surfaces to a clear shine.
4. Vacuum clean carpeted and/or similar soft surfaces.
5. Clean, damp mop, wax, and polish resilient and hard surface floor as specified.
6. Clean surfaces of equipment; remove excess lubrication.
7. Clean plumbing fixtures, and food service equipment, to a sanitary condition.
8. Clean permanent filters of ventilating equipment and replace disposable filters when units have been operated during construction; in addition, clean ducts, blowers, and coils when units have been operated without filters during construction.
9. Clean light fixtures and lamps.
10. Clean all roadways, parking areas and sidewalks within the project site and offsite, if applicable.
11. Remove waste, debris, and surplus materials from site. Clean grounds; remove stains, spills, and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.

E. Site Maintenance: Should the Contractor fail to clean up the construction area each day to the satisfaction of the Owner, this may be done by others and the cost thereof plus ten percent (10%) deducted from the final payment.

END OF SECTION

SECTION 01 74 19
WASTE MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes administrative requirements for the following:

1. Salvaging nonhazardous demolition waste.
2. Recycling nonhazardous demolition waste.
3. Disposing of nonhazardous demolition waste.

1.02 DEFINITIONS

A. Contaminated Material: In accordance with definition in Section 01 10 00, General Requirements.

B. Construction Waste; Building and site improvement materials and other solid waste resulting from construction, remodeling, renovations or repair operations. Construction waste includes packaging.

C. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations. Any demolition waste from subsurface structures in contaminated zones must be handled as Contaminated Material.

D. Disposal: Removal off-site of demolition waste and subsequent sale, recycling, reuse, or deposit in landfills acceptable to authorities having jurisdiction.

E. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.

F. Salvage: Recovery of demolition waste and subsequent sale or reuse in another facility.

1.03 SUBMITTALS

A. Informational Submittals:

1. Waste Management Plan: Submit five (5) copies of plan within ten (10) days following the Notice to Proceed.
2. Waste Accountability Report: Concurrent with request for substantial completion, submit three (3) copies of report. Include the following information:
   a. Total quantity of waste generated in tons.
   b. Quantity of waste recycled in tons.

c. Quantity of waste salvaged in tons.
d. Quantity of waste landfilled in tons.
e. Waste Diversion Rate - Total quantity of waste recovered (sum of salvaged and recycled) as a percentage of total waste generated.

3. Records of Donations/Sales: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations.
4. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
5. Landfill Disposal Records: Indicate receipt and acceptance of waste by landfill facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

1.05 PERFORMANCE REQUIREMENT

A. General: The Owner's end-of-Project goal for salvage/recycling of material is 50 percent with a stretch goal of 75 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators.

B. Waste Management Summary: It is the Contractor's responsibility to keep track of the type and quantity of materials, by weight tickets, sent to salvage yards, recycling centers, and landfills. The following types of materials shall be salvaged or recycled at a minimum:

1. Asphaltic concrete paving.
2. Concrete.
3. Concrete reinforcing steel.
4. Concrete masonry units and brick.
5. Piping and electrical conduit.
6. Copper wiring.
7. Scrap steel piling.

1.06 WASTE MANAGEMENT PLAN

A. Develop a waste management plan that consists of a waste identification and a waste reduction work plan. The waste management program shall control wastes such as discarded building materials, concrete truck washout, chemicals, litter, or trash generated by construction workers or mobile food vendor businesses serving them, and all sanitary waste at the construction site

and prevent offsite migration that may cause adverse impacts to neighboring properties or to the environment.

B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work.

C. Waste Reduction Work Plan: List each type of waste and how it will be salvaged, recycled, or disposed.

1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use materials which will not create hazards to health or property, and which will not damage surfaces.

B. Use only materials and methods recommended by manufacturer of material being cleaned.

C. Cleaning products shall meet specifications in Section 01 74 00, Cleaning.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PLAN

A. Implement approved Project Waste Management Plan. Provide handling, containers, transportation, and other items as required to implement waste management plan during the entire duration of the Contract. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. Dispose of such waste materials, debris, and rubbish offsite. Provide separate containers for recyclable materials in addition to non-recyclable waste containers. Remove and properly recycle collected items as material volumes accumulate.

B. Salvage and refurbish any non-toxic demolition or construction waste items that can be utilized for temporary construction means.

C. The Contractor shall be responsible for implementing, monitoring, and reporting status of waste management plan.

END OF SECTION

SECTION 01 77 00
CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for a Project Closeout.

1.02 PREREQUISITES TO SUBSTANTIAL COMPLETION

A. Definition: The functional and aesthetic qualities of the work have been completed to the point in which the Owner can utilize the project for the purpose for which it was intended as determined by the Owner.

B. Complete items in following paragraphs before requesting Certification of Substantial Completion either for entire Work or for portions of Work.

C. Submit maintenance manuals, project record documents, O & M Manuals, damage or settlement surveys, property surveys, photographs and other similar final record data

D. Complete facility startup, testing, adjusting and balancing of systems and equipment

E. Deliver tools, spare parts, extra stock, etc. to the Owner

F. Perform final cleaning

G. Complete equipment and process systems operational training.

H. Submit an Application for Payment that coincides with, or first follows, date Substantial Completion is claimed, show 100 percent completion for portion of Work claimed as substantially completed.

1. Include supporting documentation for completion as indicated in Contract Documents and a statement showing an accounting of changes to Contract Sum.
2. If 100 percent completion cannot be shown, include a list of incomplete items, value of incomplete construction, and reason Work is not completed.

I. Advise the Owner of pending insurance changeover requirements.

J. Submit specific warranties, workmanship bonds, maintenance agreements, final certification and similar documents.

K. Obtain and submit releases enabling the Owner unrestricted use of Work and access to services and utilities. Including occupancy permits, operating certificates, and similar releases.

1.03 SUBSTANTIAL COMPLETION INSPECTION

A. When Contractor considers Work to be substantially complete, submit to the Owner:

1. Written certificate that Work, or designated portion, is substantially complete.
2. List of items to be completed or corrected.
3. Certify that the work has been completed in accordance with the Contract Documents.
4. Certify that the equipment and systems have been tested and are operational.

B. Within 10 days after receipt of request for Substantial Completion. The Owner will make inspection to determine whether Work or designated portion is substantially completed.

C. After the inspection, the Owner shall:

1. Prepare and submit to the Contractor, a list of items to be completed or corrected, as determined by the inspection.
2. Prepare and issue a Certificate of Substantial Completion, containing:
    a. The date of substantial completion
    b. The list of items to be completed or corrected by the Contractor
    c. The timeframe within which the Contractor shall complete or correct the work of the above listed items.
    d. The associated cost of to complete or correct the work of the above listed items.
    e. The Owner shall pay the Contractor in full within forty-five days following the date of Substantial Completion less only one and one-half times such amount as determined above.
    f. The time and date that the Owner will assume complete ownership and control of the work or designated portion thereof.
    g. The responsibilities of the Contractor for:
        1) Insurance.
        2) Utilities.
        3) Maintenance.
        4) Security.
        5) Operations.
        6) Safety.
        7) Heat.

h. Certificate shall contain the signature of the:
   1) Owner.
   2) Contractor.
   3) Resident Engineer, if applicable.
   4) Construction Manager, if applicable.
   5) Design Engineer, if applicable.

3. The Owner shall have the right to exclude the Contractor from the Work after the date of Substantial Completion, but the Owner shall allow the Contractor reasonable access to complete or correct items on the list.

D. The Substantial Completion Inspection shall include, but not be limited to:

1. The project contracted work and any additional change orders.
2. All equipment and systems tested and shown operational in the presence of the Owner.

E. Should the Owner determine that Work is not substantially complete:

1. The Owner shall immediately notify the Contractor, in writing, stating the reasons.
2. Contractor shall complete the work, and then send a second written notice to the Owner certifying that the Project, or designated portion of the Project, is substantially complete.
3. The Owner shall then re-inspect the work upon the Contractors request at a scheduled re-inspection time.

1.04 PREREQUISITES FOR FINAL COMPLETION/FINAL ACCEPTANCE

A. Definition: Final Completion shall not occur until installation required by the contract documents is one hundred percent (100%) complete as determined by the Owner.

B. Complete items in following paragraphs before requesting final payment. List known exceptions, if any, in request.

C. When Contractor considers Work to be complete, submit written verification that:

1. Contract Documents have been reviewed.
2. Work has been examined for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. Work is completed and ready for final inspection.

D. Submit following:

1. Submit a certified copy of the Final Inspection Punch List. This certified copy shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Owner.

2. Final payment request with final release and supporting documentation not previously submitted and accepted. Include certification of installation for products and completed operations where required.
3. Submit specific warranties, workmanship and maintenance bonds, maintenance agreements, final certifications and other similar documents.
4. Submit Consent of Surety to Final Payment.
5. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
6. Releases from all parties who are entitled to claims against the subject Project, property, or improvement pursuant to the provisions of law.
7. Certify that the work has been completed in accordance with the Contract Documents.
8. Certify that the equipment and systems have been tested and are operational.
9. Submit a final liquidated damages settlement statement.
10. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
11. Submit an updated final statement, accounting for final additional changes to Contract Sum.
12. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when the Owner took passion of and assumed responsibility for corresponding elements of Work.
13. Evidence of release of all liens and stop notices.
14. Provide copies of hazardous waste manifests and hazardous materials spill records.
15. Certify that the Project is completed and is ready for final inspection.

1.05 FINAL COMPLETION INSPECTION

A. Within ten (10) days after receipt of request for final inspection, the Owner will make inspection to determine whether Work or designated portion is complete following procedures indicated in the Conditions of the Contract. In the event the Owner considers Work to be incomplete or defective:

1. The Owner will promptly notify Contractor, in writing, listing incomplete or defective work.
2. Contractor shall take immediate steps to remedy stated deficiencies and give a written request to the Owner that Work is complete.
3. The Owner will re-inspect Work.

B. When the Owner considers the work is finally complete and in accordance with the requirements of the Contract Documents, the Owner shall request the Contractor to make Project Closeout submittals.

C. At completion of the Contract and before final payment is made, the Contractor shall furnish the Owner two (2) full size sets of clearly readable,

documents and four (4) flash drives, each containing a complete electronic set of Record Documents (including reference documents, shop drawings, technical submittals, O&M Manuals, training Manuals, cut sheets, etc.)

1.06 REINSPECTION PROCEDURES

A. The Owner will re-inspect the Work to verify that the items identified on the Incomplete Work List and Punch List has been completed.

B. Re-inspections will be scheduled upon receipt of notice that Work from the respective inspection lists has been completed.

C. At the Owner's discretion, Contractor shall pay all costs associated with repetitive re-inspections (more than two re-inspections) of the same inspection list items.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Detailed information for the preparation, submission, and Engineer's review of Operations and Maintenance (O&M) Data, as required by individual Specification sections. O&M manuals must be submitted in electronic and hard copy format as defined herein.

1.02 DEFINITIONS

A. Preliminary Data: Initial and subsequent submissions for Engineer's review.

B. Final Data: Engineer-accepted data, submitted as specified herein.

C. Maintenance Operation: As used on Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.03 SEQUENCING AND SCHEDULING

A. Equipment and System Data:

1. Preliminary Data:
   a. Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Engineer.
   b. Submit prior to shipment date.
   c. Submit three hard copies.
2. Final Data: Submit six hard copies and one in electronic bookmarked, PDF format. Submit Instructional Manual Formatted data not less than 30 days prior to equipment or system field functional testing.

B. Materials and Finishes Data:

1. Preliminary Data: Submit at least 15 days prior to request for final inspection.
2. Final Data: Submit within 10 days after final inspection.

1.04 DATA FORMAT

A. Prepare preliminary and final data in the form of an instructional manual.

B. Instructional Manual Format:

1. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
2. Size: 8-1/2 inches by 11 inches, minimum.
3. Cover: Identify manual with typed or printed title "OPERATION AND MAINTENANCE DATA" and list:
    a. Project title.
    b. Designate applicable system, equipment, material, or finish.
    c. Identity of separate structure as applicable.
    d. Identify volume number if more than one volume.
    e. Identity of general subject matter covered in manual. Identity of equipment number and Specification section.
4. Spine:
    a. Project title.
    b. Identify volume number if more than one volume.
5. Title Page:
    a. Contractor name, address, and telephone number.
    b. Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
        1) Identify area of responsibility of each.
        2) Provide name and telephone number of local source of supply for parts and replacement.
6. Table of Contents:
    a. Neatly typewritten and arranged in systematic order with consecutive page numbers.
    b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
7. Paper: 20-pound minimum, white for typed pages.
8. Text: Manufacturer's printed data, or neatly typewritten.
9. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
10. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.

C. Data Compilation Format:

1. Compile all Engineer-accepted preliminary O&M data into a hard-copy, hard-bound set.
2. Each set shall consist of the following:
    a. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.

b. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE DATA, VOLUME NO. ___ OF ___", and list:
   1) Project title.
   2) Contractor's name, address, and telephone number.
   3) If entire volume covers equipment or system provided by one Supplier include the following:
      a) Identity of general subject matter covered in manual.
      b) Identity of equipment number and Specification section.

c. Provide each volume with title page and typed table of contents with consecutive page numbers. Place contents of entire set, identified by volume number, in each binder.

d. Table of contents neatly typewritten, arranged in a systematic order:
   1) Include list of each product, indexed to content of each volume.
   2) Designate system or equipment for which it is intended.
   3) Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.

e. Section Dividers:
   1) Heavy, 80-pound cover weight, tabbed with numbered plastic index tabs.
   2) Fly-Leaf:
      a) For each separate product, or each piece of operating equipment, with typed description of product and major component parts of equipment.
      b) List with Each Product:
         (1) Name, address, and telephone number of Subcontractor, Supplier, installer, and maintenance contractor, as appropriate.
         (2) Identify area of responsibility of each.
         (3) Provide local source of supply for parts and replacement.
      c) Identity of separate structure as applicable.

f. Assemble and bind material, as much as possible, in same order as specified in the Contract Documents.

D. Electronic Media Format:

1. Portable Document Format (PDF):
   a. After all preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in bookmarked (for all major section and subsections) PDF format on flash drive.
   b. Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.

c. Files to be fully functional and viewable in most recent version of Adobe Acrobat.

1.05 SUBMITTALS

A. Informational:

1. Preliminary Data:
   a. Submit three copies for Engineer's review.
   b. If data meets conditions of the Contract:
      1) One copy will be returned to Contractor.
      2) One copy will be forwarded to Resident Project Representative.
      3) One copy will be retained in Engineer's file.
   c. If data does not meet conditions of the Contract:
      1) All copies will be returned to Contractor with Engineer's comments (on separate document) for revision.
      2) Engineer's comments will be retained in Engineer's file.
      3) Resubmit three copies revised in accordance with Engineer's comments.
2. Final Data: Submit four copies in format specified herein.

1.06 DATA FOR EQUIPMENT AND SYSTEMS

A. Content For Each Unit (or Common Units) and System:

1. Product Data:
   a. Include only those sheets that are pertinent to specific product.
   b. Clearly annotate each sheet to:
      1) Identify specific product or part installed.
      2) Identify data applicable to installation.
      3) Delete references to inapplicable information.
   c. Function, normal operating characteristics, and limiting conditions.
   d. Performance curves, engineering data, nameplate data, and tests.
   e. Complete nomenclature and commercial number of replaceable parts.
   f. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.
   g. Spare parts ordering instructions.
   h. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).
2. As-installed, color-coded piping diagrams.
3. Charts of valve tag numbers, with the location and function of each valve.

4. Drawings: Supplement product data with Drawings as necessary to clearly illustrate:
    a. Format:
        1) Provide reinforced, punched, binder tab; bind in with text.
        2) Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8-1/2 inches by 11 inches.
        3) Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.
        4) Identify Specification section and product on Drawings and envelopes.
    b. Relations of component parts of equipment and systems.
    c. Control and flow diagrams.
    d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.
5. Instructions and Procedures: Within text, as required to supplement product data.
    a. Format:
        1) Organize in consistent format under separate heading for each different procedure.
        2) Provide logical sequence of instructions for each procedure.
        3) Provide information sheet for Owner's personnel, including:
            a) Proper procedures in event of failure.
            b) Instances that might affect validity of guarantee or Bond.
    b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
    c. Operating Procedures:
        1) Startup, break-in, routine, and normal operating instructions.
        2) Test procedures and results of factory tests where required.
        3) Regulation, control, stopping, and emergency instructions.
        4) Description of operation sequence by control manufacturer.
        5) Shutdown instructions for both short and extended duration.
        6) Summer and winter operating instructions, as applicable.
        7) Safety precautions.
        8) Special operating instructions.
    d. Maintenance and Overhaul Procedures:
        1) Routine maintenance.
        2) Guide to troubleshooting.
        3) Disassembly, removal, repair, reinstallation, and re-assembly.
6. Guarantee, Bond, and Service Agreement: In accordance with Section 01 77 00, Contract Closeout.

B. Content for Each Electric or Electronic Item or System:

1. Description of Unit and Component Parts:
    a. Function, normal operating characteristics, and limiting conditions.
    b. Performance curves, engineering data, nameplate data, and tests.
    c. Complete nomenclature and commercial number of replaceable parts.
    d. Interconnection wiring diagrams, including control and lighting systems.
2. Circuit Directories of Panelboards:
    a. Electrical service.
    b. Control requirements and interfaces.
    c. Communication requirements and interfaces.
    d. List of electrical relay settings, and control and alarm contact settings.
3. Electrical interconnection wiring diagram, including as applicable, single-line, three-line, schematic and internal wiring, and external interconnection wiring.
4. As-installed control diagrams by control manufacturer.
5. Operating Procedures:
    a. Routine and normal operating instructions.
    b. Startup and shutdown sequences, normal and emergency.
    c. Safety precautions.
    d. Special operating instructions.
6. Maintenance Procedures:
    a. Routine maintenance.
    b. Guide to troubleshooting.
    c. Adjustment and checking.
    d. List of relay settings, control and alarm contact settings.
7. Manufacturer’s printed operating and maintenance instructions.
8. List of original manufacturer’s spare parts, manufacturer’s current prices, and recommended quantities to be maintained in storage.

C. Maintenance Summary:

1. Compile individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
2. Format:
    a. Use Maintenance Summary Form bound with this section or electronic facsimile of such.
    b. Each Maintenance Summary may take as many pages as required.
    c. Use only 8-1/2-inch by 11-inch size paper.
    d. Complete using typewriter or electronic printing.

3. Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommend type, grade, and temperature range of lubricants and frequency of lubrication.
4. Recommended Spare Parts:
    a. Data to be consistent with manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
    b. "Unit" is the unit of measure for ordering the part.
    c. "Quantity" is the number of units recommended.
    d. "Unit Cost" is the current purchase price.

1.07 DATA FOR MATERIALS AND FINISHES

A. Content for Architectural Products, Applied Materials, and Finishes:

1. Manufacturer's data, giving full information on products:
    a. Catalog number, size, and composition.
    b. Color and texture designations.
    c. Information required for reordering special-manufactured products.
2. Instructions for Care and Maintenance:
    a. Manufacturer's recommendation for types of cleaning agents and methods.
    b. Cautions against cleaning agents and methods that are detrimental to product.
    c. Recommended schedule for cleaning and maintenance.

B. Content for Moisture Protection and Weather Exposed Products:

1. Manufacturer's data, giving full information on products:
    a. Applicable standards.
    b. Chemical composition.
    c. Details of installation.
2. Instructions for inspection, maintenance, and repair.

1.08 SUPPLEMENTS

A. The supplement listed below, following "End of Section," is part of this Specification.

1. Maintenance Summary Form.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

MAINTENANCE SUMMARY FORM

PROJECT:_____ CONTRACT NO.:_____

1. EQUIPMENT ITEM: _____
2. MANUFACTURER: _____
3. EQUIPMENT/TAG NUMBER(S): _____
4. SERIAL NUMBER(S): _____
5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): _____
6. OPERATING PARAMETERS/NAMEPLATE DATA (hp, voltage, speed, TDH, gpm, impeller size/type, copy of pump curve, seal type and size, etc.): _____
7. EQUIPMENT MSRP: _____
8. DATE OF SERVICE: _____
9. WARRANTY INFORMATION (time period and contact information): _____
10. LUBRICANT LIST (include environmentally friendly products, if applicable): _____
11. MANUFACTURER'S LOCAL REPRESENTATIVE: _____
    a. Name_____ Telephone No. _____
    b. Address _____
12. ALTERNATIVE PARTS SUPPLIER (if applicable): _____
13. MAINTENANCE REQUIREMENTS:

Maintenance Operation Comments	**Frequency**	**Lubricant (If Applicable)**
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.

14. LUBRICANT LIST

Reference Symbol	Shell	Exxon Mobile	Chevron Texaco	BP Amoco	Or Equal
List symbols used in No. 10 above.	List equivalent lubricants, as distributed by each manufacturer for the specific use recommended.				

15. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY.

Part No.	Description	Unit	Quantity	Unit Cost
Note: Identify parts provided by this Contract with two asterisks.				

16. EQUIPMENT SUMMARY CHART FOR OWNER'S INVENTORY.

Equipment	Tag Number	Serial Number	MSRP

SECTION 01 78 40
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Specifications
2. Record Product Data

B. AlexRenew Standards for Record Documents will be provided to the Contractor at the pre-construction meeting.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store Contract Documents and samples in Contractor's field office apart from documents used for construction.

1. Provide files and racks for storage of documents
2. Provide secure storage space for storage of samples

B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. Within one day's notice, during the course of the work, current record documents shall be made available for inspection by Owner.

1.03 RECORDING "AS BUILT RECORD" MODIFICATIONS

A. Label each document "As Built Record" in neat, large, printed letters.

B. Record information concurrently with construction progress.

1. Do not conceal any work until required information is recorded.
2. Accurately record information in an understandable drawing technique.
3. Mark Record Prints to show the actual installation where installation varies from that shown originally.

C. Project Manual: Legibly mark each section to record:

1. Changes made by addenda.
2. Changes made by written field order or by change order.
3. Products actually used where choices are indicated or where substitutions are accepted.

4. Mark Specifications to indicate the actual product installations where installation varies from that indicated in Specifications, Addenda and contract modifications.
    a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
    b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
    c. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
    d. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.

1.04 RECORD PRODUCT DATA

A. Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

B. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

C. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

1.05 CERTIFICATION

A. Certify as a part of each application for payment that project record documents are current at time application is submitted.

1.06 SUBMITTAL "AS BUILT RECORD" DOCUMENTS

A. At completion of the project, the Contractor shall submit two (2) electronic copies via CD of the Record Specifications to the Owner. Certify to their accuracy and completion. All modifications clearly marked for identification.

B. Submit three (3) copies of each Product Data submittal. Where Record Product Data is required as part of operation and maintenance manuals; submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

1.07 QUALITY ASSURANCE

A. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.

B. Accuracy of Records:

1. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
2. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.

C. Make entries within 24 hours after receipt of information that a change in the Work has occurred.

D. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 RECORDING AND MAINTENANCE

A. General:

1. Promptly following commencement of Contract Times, secure from Engineer at no cost to Contractor, one complete set of Contract Documents. Drawings will be full size.
2. Delete Engineer title block and seal from all documents.
3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.

B. Recording:

1. Maintain one (1) copy of each submittal during the construction period for Project Record Document purposes.
2. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of the Project.
3. Digital Records: entries on the PDF drawings, using a program such as BlueBeam, clearly describe change by graphic line and note as required.
4. Color Coding:
   a. Green when showing information deleted from Drawings.
   b. Red when showing information added to Drawings.
   c. Blue and circled in blue to show notes.

5. Date entries: call attention to entry by "cloud" drawn around area or areas affected.
6. Legibly mark to record actual changes made during construction, including, but not limited to:
    a. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
    b. Horizontal and vertical locations of existing and new Underground Facilities and appurtenances, and other underground structures, equipment, or Work. Reference to at least two measurements to permanent surface improvements.
    c. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
    d. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
    e. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
7. Dimensions on Schematic Layouts: Show on record drawings, by dimension, the centerline of each run of items such as are described in previous subparagraph above.
    a. Clearly identify the item by accurate note such as "cast iron drain," "galv. water," and the like.
    b. Show, by symbol or note, vertical location of item ("under slab," "in ceiling plenum," "exposed," and the like).
    c. Make identification so descriptive that it may be related reliably to Specifications.

C. Maintenance:

1. Store Record Documents and Samples apart from the Contract Documents used for construction.
2. Do not use Project Record Documents for construction purposes.
3. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss.
4. Provide access to Project Record Documents for Owner's reference during normal working hours.

END OF SECTION

SECTION 01 79 26
WARRANTIES

PART 1 GENERAL

1.01 SUMMARY

A. Work specified in this Section includes but is not limited to the following:

1. Administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

B. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

1.02 DISCLAIMERS AND LIMITATIONS

A. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products.

B. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.03 DEFINITIONS

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.04 WARRANTY REQUIREMENTS

A. Related Damages and Losses:

1. When correcting failed or damaged warranted construction, Contractor shall remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

B. Reinstatement of Warranty:

1. When Work covered by a warranty has failed and been corrected by replacement or rebuilding, Contractor shall reinstate the warranty by written endorsement
2. The reinstated warranty shall be equal to the original warranty.

C. Replacement Cost:

1. Upon determination that Work covered by a warranty has failed, Contractor shall replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents.
2. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. The Owner's Recourse:

1. Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law.
2. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
    a. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

F. Contractor shall guarantee all materials and workmanship for a period of 12 months from the date of final acceptance of Work.

1.05 WARRANTY PERIOD

A. Date of beginning of time of warranty will be the date of Substantial Completion or date of Beneficial Occupancy if equipment is put to use by the Owner at date of Beneficial Occupancy.

B. No warranty shall start prior to equipment being put into operation.

C. Equipment warranty period: Manufacturer's standard warranty, minimum 1 year from above date of beginning of warranty, except as stated elsewhere.

1.06 SUBMITTALS

A. Contractor shall submit written warranties to the Owner prior to the date certified for Final Inspection.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, Contractor shall submit properly executed warranties to the Owner within 15 days of completion of that designated portion of the Work.

B. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, Contractor shall prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Engineer, for approval prior to final execution.

1. Refer to Divisions 2 through 50 for specific content requirements and particular requirements for submitting special warranties.

C. Warranties and Bonds in Operations and Maintenance Manual:

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation.
2. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
3. Identify each binder on the front with the typed or printed title "WARRANTIES".

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 LIST OF WARRANTIES

A. Refer to individual Sections for required product warranty information.

END OF SECTION

SECTION 01 88 15
ANCHORAGE AND BRACING

PART 1 GENERAL

1.01 SUMMARY

A. This section covers requirements for anchorage and bracing of equipment, distribution systems, and other nonstructural components required in accordance with the ICC 2021 International Building Code (IBC), for seismic, wind, gravity, soil, and operational loads.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Institute of Steel Construction (AISC) 360, Specification for Structural Steel Buildings.
2. American Society of Civil Engineers (ASCE): ASCE 7, Minimum Design Loads for Buildings and Other Structures.
3. International Code Council (ICC): International Building Code (IBC).
4. Virginia Uniform Statewide Building Code.

1.03 DEFINITIONS

A. Authority Having Jurisdiction (AHJ): Permitting building agency; may be a federal, state, local, or other regional department, or individual including building official, fire chief, fire marshal, chief of a fire prevention bureau, labor department, or health department, electrical inspector; or others having statutory authority. AHJ may be Owner when authorized to be self-permitting by governmental permitting agency or when no governmental agency has authority.

B. Designated Seismic System: Architectural, electrical, and mechanical system or their components for which component importance factor is greater than 1.0.

1.04 DESIGN AND PERFORMANCE REQUIREMENTS

A. General:

1. Anchorage and bracing systems shall be designed by a qualified professional engineer registered in the Commonwealth of Virginia.
2. Design anchorage into concrete including embedment in accordance with ACI 318-19; Chapter 17 (or other industry standard approved by Engineer), and Project Specifications.
   a. Unless otherwise noted, design for cracked concrete condition.

3. Design anchorage and bracing of architectural, mechanical, and electrical components and systems in accordance with this section, unless a design is specifically provided within Contract Documents or where exempted hereinafter.
4. Design attachments, braces, and anchors for equipment, components, and distribution systems to structure for gravity, seismic, wind, and operational loading.
5. Anchor and brace piping and ductwork, whether exempt or not exempt for this section, so that lateral or vertical displacement does not result in damage or failure to essential architectural, mechanical, or electrical equipment.
6. Architectural Components: Includes, but are not limited to, nonstructural walls and elements, partitions, cladding and veneer, access flooring, signs, cabinets, suspended ceilings, and glass in glazed curtain walls and partitions.
7. Provide supplementary framing where required to transfer anchorage and bracing loads to structure.
8. Adjust equipment pad sizes or provide additional anchorage confinement reinforcing to provide required anchorage capacities.
9. Design anchorage and bracing for:
    a. Equipment and components that weigh more than 800 pounds and are mounted 5 feet or less above adjacent finished floor.
    b. Equipment weighing more than 75 pounds that is mounted more than 5 feet above adjacent finished floor.
    c. Distribution systems that weigh more than 5 pounds per foot that are mounted more than 5 feet above adjacent finished floor.
10. For components exempted from design requirements of this section, provide bolted, welded, or otherwise positively fastened attachments to supporting structure.

B. Design Loads:

1. Gravity: Design anchorage and bracing for self-weight and superimposed loads on components and equipment.
2. Wind: Design anchorage and bracing for wind criteria provided on General Structural Notes on Drawings for exposed architectural components and exterior and wind-exposed mechanical and electrical equipment. Alternately, manufacturer certification may be provided for components such as roofing and flashing to verify attachments meet Project-specific design criteria.
3. Operational:
    a. For loading supplied by equipment manufacturer for IBC required load cases.
    b. Loads may include equipment vibration, torque, thermal effects, effects of internal contents (weight and sloshing), water hammer, and other load-inducing conditions.
    c. Locate braces to minimize vibration to or movement of structure.

d. For vibrating loads, use anchors meeting requirements of Section 05 05 19, Post-Installed Anchors, for anchors with designated capacities for vibratory loading per manufacturer's ICC-ES report.

4. Seismic:
   a. In accordance with 2021 IBC, Section 1613, and Chapter 13 of ASCE 7.
   b. Design anchorage and bracing for design criteria listed on General Structural Notes on Drawings.

1.05 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
   a. List of architectural, mechanical, and electrical equipment requiring Contractor-designed anchorage and bracing, unless specifically exempted.
   b. Manufacturers' engineered seismic and non-seismic hardware product data.
   c. Attachment assemblies' drawings including seismic attachments; include connection hardware, braces, and anchors or anchor bolts for nonexempt components, equipment, and systems.
   d. Submittal will be rejected if proposed anchorage method would create excessive stress to supporting member. Revise anchorages and strengthen structural support to eliminate overstressed condition.

B. Informational Submittals:

1. Anchorage and Bracing Calculations: For attachments, braces, and anchorages, include IBC and Project-specific criteria as noted on General Structural Notes on Drawings, in addition to manufacturer's specific criteria used for design; sealed by a civil engineer registered in the Commonwealth of Virginia.
2. Manufacturer's hardware installation requirements.

C. Deferred Submittals:

1. Submitted seismic anchorage drawings and calculations are identified as IBC deferred submittals and will be submitted to and must be accepted by AHJ prior to installation of component, equipment, or distribution system.
2. Submit deferred Action Submittals such as Shop Drawings with supporting deferred informational submittals such as calculations no less than 4 weeks in advance of installation of component, equipment or distribution system to be anchored to structure.

1.06 SOURCE QUALITY CONTROL

A. Contractor and supplier responsibilities to accommodate Owner-furnished shop fabrication related special inspections and testing are provided in Project's Statement of Special Inspections on Drawings and Section 01 45 33, Special Inspection, Observation, and Testing.

B. Provide all other specified, regulatory required, or required repair verification inspection and testing that is not listed in Statement of Special Inspections in accordance with Section 01 45 16, Contractor Quality Control.

C. Provide Source Quality Control for welding and hot-dip galvanizing of anchors in accordance with Section 05 50 00, Metal Fabrications.

PART 2 PRODUCTS

2.01 GENERAL

A. Design and construct attachments and supports transferring seismic and non-seismic loads to structure of materials and products suitable for application and in accordance with design criteria shown on Drawings and nationally recognized standards.

B. Provide anchor bolts for anchorage of equipment to concrete or masonry in accordance with Section 05 50 00, Metal Fabrications. Provide anchor bolts of the size, minimum embedment, and spacing designated in calculations submitted by Contractor and accepted by Engineer.

C. Provide post-installed concrete and masonry anchors for anchorage of equipment to concrete or masonry in accordance with Section 05 05 19, Post-Installed Anchors. Provide post-installed anchors of the size, minimum embedment, and spacing designated in calculations submitted by Contractor and accepted by Engineer.

D. Do not use powder-actuated fasteners or sleeve anchors for seismic attachments and anchorage where resistance to tension loads is required. Do not use expansion anchors, other than undercut anchors, for nonvibration isolated mechanical equipment rated over 10 horsepower.

PART 3 EXECUTION

3.01 GENERAL

A. Make attachments, bracing, and anchorage in such a manner that component lateral force is transferred to lateral force resisting system of structure through a complete load path.

B. Design, provide, and install overall seismic anchorage system to provide restraint in all directions, including vertical, for each component or system so anchored.

C. Provide snubbers in each horizontal direction and vertical restraints for components mounted on vibration isolation systems where required to resist overturning.

D. Provide piping anchorage that maintains design flexibility and expansion capabilities at flexible connections and expansion joints.

1. Piping and ductwork suspended more than 12 inches below supporting structure shall be braced for seismic effects to avoid significant bending of hangers and their attachments, unless high- or limited-deformability piping is used per ASCE 7, Section 13.6.8 or HVAC ducts have a cross-sectional area of less than 6 square feet or weigh 17 pounds per foot or less.

E. Anchor tall and narrow equipment such as motor control centers and telemetry equipment at base and within 12 inches from top of equipment, unless approved otherwise by Engineer.

F. Do not attach architectural, mechanical, or electrical components to more than one element of a building structure at a single restraint location where such elements may respond differently during a seismic event. Do not make such attachments across building expansion and contraction joints.

3.02 INSTALLATION

A. Do not install components or their anchorages or restraints prior to review and acceptance by Engineer and AHJ.

B. Notify Engineer upon completion of installation of seismic restraints in accordance with Section 01 45 33, Special Inspection, Observation, and Testing.

3.03 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

A. In accordance with Section 05 05 19, Post-Installed Anchors.

B. Owner-Furnished Quality Assurance, in accordance with IBC Chapter 17 requirements, is provided in Statement of Special Inspections Plan on Drawings. Contractor responsibilities and related information are included in Section 01 45 33, Special Inspection, Observation, and Testing.

C. Provide any other specified, regulatory required, or required repair verification inspection and testing that is not listed in Statement of Special Inspections.

END OF SECTION

SECTION 01 91 00
EQUIPMENT SYSTEMS COMMISSIONING

PART 1 GENERAL

1.01 DEFINITIONS

A. Commissioning: The series of activities required of the Contractor necessary to bring components or systems from installation to readiness, to startup and completion of Operational Demonstration.

B. Facility: Entire Project, or an agreed upon portion, including all of its unit processes.

C. Operational Demonstration:

1. A demonstration, conducted by Contractor, with assistance of Owner, to demonstrate and document the performance of the entire operating facility, both manually and automatically (if required), based on criteria developed in conjunction with Owner and as accepted by Engineer.
2. Such demonstration is for the purposes of (i) verifying to Owner entire facility performs as a whole, and (ii) documenting performance characteristics of completed facility for Owner's records. Neither the demonstration nor the evaluation is intended in any way to make performance of a unit process or entire facility the responsibility of Contractor, unless such performance is otherwise specified.

D. Equipment Tests: tests in presence of Engineer and Owner to demonstrate that installed equipment meets manufacturer's installation, calibration, and adjustment requirements and other requirements as specified.

E. Performance Test: Wet-Test or tests performed after any required functional test in presence of Engineer and Owner to demonstrate and confirm individual equipment meets performance requirements specified in individual sections.

F. Unit Process: As used in this section, a unit process is a portion of the facility that performs a specific process function, such as production of chilled water and pumping.

G. Wet Testing: Wet Testing is testing performed by the Contractor utilizing test material in the component, system, or unit process. Process Tankage shall be filled with test material to operating level.

1.02 SUPERVISION AND MANAGEMENT OF TESTING PROGRAM

A. Contractor shall assign a dedicated Testing and Checkout Coordinator to supervise, manage, and oversee the testing requirements of this Section.

B. Testing and Checkout Coordinator Duties and Responsibilities:

1. Develop the testing plans including the scheduling of all testing and inspection activities.
2. Submit start-up requests for vendor and subcontractor checkouts of all equipment.
3. Coordinate with the Owner for the testing and start-up of all equipment.
4. Submission of all test reports for authority review and approval.
5. Submission of the completed testing manual, including all test documentation to the Owner.
6. Participate in all Operational Demonstrations required by contract and submit the final report including all documentation.

1.03 SUBMITTALS

A. Informational Submittals:

1. Qualifications:
   a. Submit resumes, including three outside references, for each team member proposed for testing, startup, and commissioning at least 60 days before the functional testing, start-up, and commissioning operations are to begin. At a minimum, include the following staffing, as appropriate for the equipment/systems being tested and commissioned:
      1) Startup manager.
      2) Electrical Systems Start-up Engineer, Technician, or Specialist.
      3) Instrumentation and Control Systems Start-up Engineer, Technician, or Specialist.
      4) Major Mechanical Equipment and Piping Start-up Engineer, Technician, or Specialist.
      5) HVAC Systems and Ducting Start-up Engineer, Technician, or Specialist.
   b. The Owner will review resumes. Based upon review of resumes, and contacts with references, the Owner will approve, request additional information, or reject proposed startup and commissioning team members.
   c. If a proposed startup and commissioning team member is rejected, submit resume and references for a replacement team member for consideration

2. Facility Operational Demonstration Plan.
   a. Contractor shall have an approved testing plan at least 30 days prior to beginning testing.
3. Functional and performance test results.
4. Completed Unit Process Startup Form for each unit process.
5. Completed Operational Demonstration/Certification Form.
6. Record Drawings: Test, adjustment, and balancing data shall be recorded on the Record Drawings documents as specified in the Submittals section.
7. Baseline Commissioning Report.

1.04 COMMISSIONING PLAN

A. The Commissioning Plan consists of the equipment testing plan, training of Owner's staff, and startup and operational demonstration plan.

B. The Commissioning Plan is prepared by the Contractor and submitted to the Engineer for approval. The plan is intended to outline the equipment and system test sequence and coordination requirements, data collection requirements during the Equipment Testing and Operational Demonstration, and test report(s) submittals.

C. Any changes or adjustments to the Commissioning Plan by the Contractor after it has originally been submitted and approved, must be submitted and approved by the Owner or Engineer prior to the Contractor starting the Functional Testing.

1.05 EQUIPMENT TESTING PLAN

A. The equipment testing plan shall include the sequential requirements of Installation Review, Functional and Performance Testing, and Equipment and System Check-out.

B. Installation Review: Ready-to-test determination will be made by the Resident Engineer after verifying that the installation is in accordance with Contract requirements and manufacturer's recommendations.

C. Functional and Performance Testing:

1. Equipment testing shall not commence until after the installation review is complete and the Resident Engineer's Ready-to-test determination is given.
2. Test equipment as specified, or required to prove conformance with design and manufacturer, or required to develop equipment baseline data shall be completed and documentation submitted prior to proceeding to Equipment and System Checkout.

3. The Contractor shall submit a schedule defining when the testing (both startup point and duration) for each piece of equipment or unit process will occur.
4. The Contractor shall identify the need for auxiliary systems, such as ventilation, cooling, and lubricating systems, so that the equipment can be tested safely.
5. The Engineer shall identify interfacing equipment and system that may not be part of the Work but are necessary for the design intent to be satisfied.
6. Testing shall demonstrate that equipment is ready for equipment and unit process systems startup.
    a. If any equipment or unit process systems does not comply with the testing requirements, make the necessary corrections or replacements and repeat the test until equipment testing requirements are met.
    b. Do not start up or place into service equipment and unit process systems until the testing is completed.
    c. Modify the equipment and unit process systems to meet testing requirements and retest at no additional cost to the Owner.
    d. Submit reporting documentation prior to proceeding to Operational Demonstration.
    e. Complete calibrations and submit calibration reports prior to proceeding to Operational Demonstration.
7. The minimum testing period for any piece of equipment shall be 2 consecutive hours with no equipment failure. In the event that a failure occurs in the test period, remedy the cause of the failure and start a new testing period.
8. Perform equipment related testing on power actuated (oil hydraulic, water hydraulic, pneumatic, or electric motor) valves and slide gates and their related power actuation systems before commencing the testing of the associated equipment, piping and duct systems, or unit processes or mechanical systems.
9. Complete installation and wiring of control panels, and pre-loop I/O testing and continuity checks.
10. Paint and label pipes, conduits, wires, equipment, and panels prior to Operational Demonstration.

D. Equipment and System Check-out:

1. Complete loop I/O points testing prior.
2. Submit Manufacturers' certifications.
3. Complete Training of Owner's staff as defined in Section 01 43 33, Manufacturer's Field Services.
4. Completed the above requirements prior to the request for Operational Demonstration.

5. The Resident Engineer will observe equipment and process treatment system or unit performance in a site walk-through and attempt to confirm that there are no issues that would carry through to an incomplete work list. Issues identified during the walk through shall be resolved prior to proceeding to Operational Demonstration.

1.06 FACILITY STARTUP AND OPERATIONAL DEMONSTRATION PLAN

A. Develop a written plan, in conjunction with Owner's operations personnel; to include the following:

1. Step-by-step instructions for startup of each unit process and the complete facility.
2. Unit Process Startup Form (sample attached), to minimally include the following:
    a. Description of the unit process, including equipment numbers/nomenclature of each item of equipment and all included devices.
    b. Detailed procedure for startup of the unit process, including valves to be opened/closed, order of equipment startup, etc.
    c. Startup requirements for each unit process, including water, power, chemicals, etc.
    d. Space for evaluation comments.
3. Operational Demonstration/Certification Form (sample attached), to minimally include the following:
    a. Description of unit processes included in the facility startup.
    b. Sequence of unit process startup to achieve facility startup.
    c. Description of computerized operations, if any, included in the facility.
    d. Contractor certification facility is capable of performing its intended function(s), including fully automatic operation.
    e. Signature spaces for Contractor and Engineer.

B. Submit daily results of the Operational Demonstration in the form of daily reports showing compliance, non-compliance, or partial compliance of equipment and systems with specifications and performance criteria to the Resident Engineer.

C. Submit consolidated Operational Demonstration daily reports into a complete equipment baseline commissioning report for each equipment and system tested within 48 hours of completion of the Operational Demonstration period.

D. Operation of the system by the Contractor shall continue past the Operational Demonstration period with the Contractor remaining responsible for the

system until submission of a final report within 48 hours of successful completion of the Operational Demonstration.

E. The successful completion of the Operational Demonstration shall be defined by the equipment or system meeting the design criteria and all unit processes being operable and under control of computer system.

F. Contract shall certify, on the Operational Demonstration/Certification Form, that facility is capable of performing its intended function(s), including fully automatic and computerized operation.

G. On demonstrating successful completion of Operational Demonstration of equipment or system and after submittal of the Operational Demonstration report, the Owner will issue Beneficial Occupancy of the tested equipment or system.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Contractor shall supply all materials and equipment used in testing, adjusting, and balancing.

B. Materials and equipment used shall be of good quality and suitable for the intended service. The use of miscellaneous items found at the job site is not acceptable.

C. Select capacity or range of test equipment to provide meaningful test results. For example, select pressure or differential pressure gauges so that test pressure is 50 percent to 75 percent of the gauge capacity.

D. Contractor shall provide or fabricate temporary equipment required for testing.

2.02 SOURCE QUALITY CONTROL

A. All instruments shall be calibrated to recognized standards, by the instrument manufacturer or a qualified independent calibration laboratory. Retain instrument calibration data at the Contractor's site office for the Owner's review.

PART 3 EXECUTION

3.01 GENERAL

A. Facility Startup and Commissioning Meetings: Schedule, in accordance with requirements of Section 01 31 19, Project Meetings, to discuss test schedule, test methods, materials, chemicals and liquids required, facilities operations interface, and Owner involvement.

B. Contractor's Testing and Startup Representative:

1. Designate and furnish one or more personnel to coordinate and expedite testing and facility startup.
2. Representative(s) shall be present during startup meetings and shall be available at all times during testing and startup.

C. Provide temporary valves, gauges, piping, test equipment and other materials and equipment required for testing and startup.

D. Provide Subcontractor and equipment manufacturers' staff adequate to prevent delays. Schedule ongoing work so as not to interfere with or delay testing and startup.

E. Owner will:

1. Provide water, power, chemicals, and other items as required for startup, unless otherwise indicated.
2. Operate process units and facility with support of Contractor.
3. Provide labor and materials as required for laboratory analyses.

3.02 EQUIPMENT TESTING

A. Preparation:

1. Complete installation before testing.
2. Furnish qualified manufacturers' representatives, when required by individual Specification sections.
3. Equipment Test Report Form: Provide written test report for each item of equipment to be tested, to include the minimum information:
   a. Owner/Project Name.
   b. Equipment or item tested.
   c. Date and time of test.
   d. Type of test performed (Functional or Performance).
   e. Test method.
   f. Test conditions.
   g. Test results.

h. Signature spaces for Contractor and Engineer as witness.

4. Cleaning and Checking: Prior to beginning functional testing:
   a. Calibrate testing equipment in accordance with manufacturer's instructions.
   b. Inspect and clean equipment, devices, connected piping, and structures to ensure they are free of foreign material.
   c. Lubricate equipment in accordance with manufacturer's instructions.
   d. Turn rotating equipment by hand when possible to confirm that equipment is not bound.
   e. Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
   f. Check power supply to electric-powered equipment for correct voltage.
   g. Adjust clearances and torque.
   h. Test piping for leaks.
5. Ready-to-test determination will be by Engineer based at least on the following:
   a. Acceptable Operation and Maintenance Data.
   b. Notification by Contractor of equipment readiness for testing.
   c. Receipt of Manufacturer's Certificate of Proper Installation, if so specified.
   d. Adequate completion of work adjacent to, or interfacing with, equipment to be tested, including items to be furnished by Owner.
   e. Availability and acceptability of manufacturer's representative, when specified, to assist in testing of respective equipment.
   f. Satisfactory fulfillment of other specified manufacturer's responsibilities.
   g. Equipment and electrical tagging complete.
   h. Delivery of all spare parts and special tools.

B. Functional Testing:

1. Conduct as specified in individual Specification sections.
2. Notify Owner and Engineer in writing at least 14 days prior to scheduled date of testing.
3. Prepare Equipment Test Report summarizing test method and results.
4. When, in Engineer's opinion, equipment meets functional requirements specified, such equipment will be accepted for purposes of advancing to performance testing phase, if so required by individual Specification sections. Such acceptance will be evidenced by Engineer/Owner's signature as witness on Equipment Test Report.

C. Performance Testing:

1. Conduct as specified in individual Specification sections.
2. Notify Engineer and Owner in writing at least 10 days prior to scheduled date of test.
3. Performance testing shall not commence until equipment has been accepted by Engineer as having satisfied functional test requirements specified.
4. Type of fluid, gas, or solid for testing shall be as specified.
5. Unless otherwise indicated, furnish labor, materials, and supplies for conducting the test and taking samples and performance measurements.
6. Prepare Equipment Test Report summarizing test method and results.
7. When, in Engineer's opinion, equipment meets performance requirements specified, such equipment will be accepted as to conforming to Contract requirements. Such acceptance will be evidenced by Engineer's signature on Equipment Test Report.
8. For all rotating machinery/equipment with a motor horsepower of more than 40, and with a rotational speed of the driven shaft in excess of 200 rpm, wet testing shall include:
    a. Constant speed equipment: operate equipment through a range of conditions (e.g., various suction/discharge pressures for pumps and measure volts, amps, and kilowatts consumed).
    b. Variable speed equipment: operate equipment at a range of speeds and other conditions (varying wet well level, etc.) and measure (ahead of the VFD) volts, amps, and kilowatts consumed.
    c. Owner vibration data templates to be completed and signed off by the engineer and forwarded to the DMS Reliability Group at least 14 calendar days prior to the beginning of Facilities Startup and Operational Demonstration.

3.03 FACILITY START UP AND OPERATIONAL DEMONSTRATION

A. Prior to unit process startup, equipment within unit process shall be accepted by Engineer as having met functional and performance testing requirements specified.

B. Make adjustments, repairs, and corrections necessary to complete unit process startup.

C. Operational Demonstration shall be considered complete when, in opinion of Engineer, unit process has operated in manner intended for a minimum of 5 continuous days without significant interruption. This period is in addition to functional or performance test periods specified elsewhere.

D. Significant Interruption: May include any of the following events:

1. Failure of Contractor to provide and maintain qualified onsite startup personnel as scheduled.
2. Failure to meet specified functional operation for more than 2 consecutive hours.
3. Failure of any critical equipment or unit process that is not satisfactorily corrected within 5 hours after failure.
4. Failure of any noncritical equipment or unit process that is not satisfactorily corrected within 8 hours after failure.
5. As determined by Engineer.

E. A significant interruption will require startup then in progress to be stopped. After corrections are made, startup test period to start from beginning again.

3.04 OPERATIONAL DEMONSTRATION CERTIFICATION

A. When, in the opinion of Engineer, startup of all unit processes has been achieved, sequence each unit process to the point that facility is operational.

B. Demonstrate proper operation of required interfaces within and between individual unit processes.

C. After facility is operating, complete performance testing of equipment and systems not previously tested.

D. Document, as defined in Facility Startup and Performance Demonstration Plan, the performance of the facility including its computer system, until all unit processes are operable and under control of computer system.

E. Certify, on the Operational Demonstration/Certification Form, that facility is capable of performing its intended function(s), including fully automatic and computerized operation.

3.05 BASELINE STANDARD COMMISSIONING REPORT

A. Following the conclusion of all testing adjusting and balancing work for each equipment component, manufacturer and contractor shall prepare and submit a baseline standard commissioning report to include documentation of the following:

1. Vibration testing.
2. Infrared analysis.
3. Ultrasound measurements.
4. Power usage under different operating conditions.
5. Flow, head and pressure.

6. Laser alignment.
7. Dynamic field balancing.

B. Provide separate reports for each separate equipment component.

C. Reports for equipment components of the same type, style, purpose, etc. shall be submitted as a complete group following the testing, adjusting and balancing of the last component in each group.

3.06 SUPPLEMENTS

A. Supplements listed below, following "End of Section," are part of this Specification:

1. Unit Process Startup Form.
2. Operational Demonstration/Certification Form.

END OF SECTION

UNIT PROCESS STARTUP FORM

OWNER: Alexandria Renew Enterprises **PROJECT: Building J Relocation & Decommissioning**

Unit Process Description: (Include description and equipment number of all equipment and devices):

Startup Procedure (Describe procedure for sequential startup and evaluation, including valves to be opened/closed, order of equipment startup, etc.):

Startup Requirements (Water, power, chemicals, etc.):

Evaluation Comments:

OPERATIONAL DEMONSTRATION/CERTIFICATION FORM

OWNER: Alexandria Renew Enterprises **PROJECT: Building J Facilities Relocation & Decommissioning**

Unit Processes Description (List unit processes involved in facility startup):

_____

_____

_____

_____

Unit Processes Startup Sequence (Describe sequence for startup, including computerized operations, if any):

_____

_____

_____

_____

_____

Contractor Certification that Facility is capable of performing its intended function(s), including fully automatic operation:

Contractor: _____ **Date: _____, 20____**

Engineer: _____ **Date: _____, 20____**
(Authorized Signature)

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this Section:

1. Air-Conditioning, Heating, and Refrigeration Institute (AHRI): Guideline K, Containers for Recovered Non-flammable Fluorocarbon Refrigerants.
2. American National Standards Institute (ANSI): A10.6, Safety Requirements for Demolition Operations.
3. Occupational Safety and Health Administration (OSHA), U.S. Code of Federal Regulations (CFR) Title 29 Part 1926—Occupational Safety and Health Regulations for Construction.
4. Environmental Protection Agency (EPA), U.S. Code of Federal Regulations (CFR), Title 40:
   a. Part 61—National Emission Standards for Hazardous Air Pollutants.
   b. Part 82—Protection of Stratospheric Ozone.
   c. Part 273—Standards for Universal Waste Management.

1.02 DEFINITIONS

A. ACM: Asbestos-containing material.

B. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building or structure or any part thereof. Demolition also includes removal of pipes, manholes tanks, conduit, and other underground facilities, whether as a separate activity or in conjunction with construction of new facilities.

C. Modify: Provide all necessary material and labor to modify an existing item to the condition indicated or specified.

D. Relocate: Remove, protect, clean and reinstall equipment, including electrical, instrumentation, and all ancillary components required to make the equipment fully functional, to the new location identified on the Drawings.

E. Renovation: Altering a facility or one or more facility components in any way.

F. Salvage/Salvageable: Remove and deliver, to the specified location(s), the equipment, building materials, or other items so identified to be saved from

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destruction, damage, or waste; such property to remain that of Owner. Unless otherwise specified, title to items identified for demolition shall revert to Contractor.

G. Universal Waste Lamp: In accordance with 40 CFR 273, the bulb or tube portion of an electric lighting device, examples of which include, but are not limited to, fluorescent, high-intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.

H. Universal Waste Thermostat: A temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.

1.03 SUBMITTALS

A. Informational Submittals:

1. Submit proposed Demolition/Renovation Plan, in accordance with requirements specified herein, for approval before such Work is started.
2. Submit copies of any notifications, authorizations and permits required to perform the Work.

1.04 REGULATORY AND SAFETY REQUIREMENTS

A. When applicable, demolition Work shall be accomplished in strict accordance with 29 CFR 1926-Subpart T.

B. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the General Conditions, Contractor’s safety requirements shall conform to ANSI A10.6.

C. Furnish timely notification of this project to applicable federal, state, regional, and local authorities in accordance with 40 CFR 61-Subpart M.

1.05 DEMOLITION/RENOVATION PLAN

A. Demolition/Renovation Plan shall provide for safe conduct of the Work and shall include:

1. Detailed plans and sections outlining which elements will be demolished, retained or transferred to Owner; include photos for additional clarity.
2. Detailed description of methods and equipment to be used for each operation.

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3. The Contractor's planned sequence of operations, including coordination with other work in progress.
4. Procedures for removal and disposition of materials specified to be salvaged.

B. Include statements affirming Contractor inspection of the existing roof deck, floors, walls, and framing members, and their suitability to perform as a safe working platform or, if inspection reveals a safety hazard to workers, state provisions for securing the safety of the workers throughout the performance of the Work.

1.06 SEQUENCING AND SCHEDULING

A. The Work of this Specification shall not commence until Contractor's Demolition/Renovation Plan has been approved by Engineer.

B. Include the Work of this Specification in the progress schedule, as specified in Section 01 32 00, Construction Progress Documentation.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXISTING FACILITIES TO BE DEMOLISHED OR RENOVATED

A. Facilities: Portions of buildings and other areas scheduled for selective demolition, partial demolition, and renovation Work are as shown on Drawings.

B. Reroofing:

1. Remove roofing to affect the connections with new flashing or roofing.
2. Cut existing membrane and insulation along straight lines.
3. Sequence Work to minimize building exposure between the time of existing roof removal and new roof material installation. Install temporary roofing and flashing as necessary to maintain a watertight condition throughout the course of the Work.
4. Remove temporary roofing and flashing prior to installation of permanent roof system materials unless otherwise approved by Engineer.
5. Refer to standard details regarding new roofing materials and installation.

C. Masonry: Sawcut and remove masonry so as to prevent damage to surfaces to remain and to facilitate the installation of new Work. Where new masonry

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adjoins existing, the new Work shall abut or tie into the existing construction as indicated and specified.

D. Concrete:

1. Core drill corners of new opening to avoid overcutting adjacent reinforcing in existing concrete to remain. Saw concrete along straight lines to a depth of not less than 2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished Work, and the remaining concrete is sound.
2. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete. Repair exposed rebar ends and embeds as shown on Drawings.
3. Where new concrete adjoins existing concrete, thoroughly clean and mechanically roughen existing concrete surfaces to roughness profile of 3/16 inch. Rebar and small embeds at existing concrete may be required to be left to engage new concrete. Saturate surface with water for 24 hours prior to placing new concrete. The new Work shall tie into the existing construction as shown on Drawings.
4. At submerged locations not to receive new concrete, paint exposed rebar or metal embed ends with System No. 19a at wastewater surfaces per Section 09 90 00, Painting and Coating.

E. Patching:

1. Where removals leave holes and damaged surfaces exposed in the finished Work, patch and repair to match adjacent finished surfaces as to texture and finish.
2. Where new Work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new Work.
3. Patching shall be as specified and indicated, and shall include:
    a. Fill holes and depressions caused by previous physical damage or left as a result of removals in existing masonry concrete, wood, wallboard, and cabinet panels walls with an approved patching material, applied in accordance with the manufacturer’s printed instructions.

F. Tile Flooring: Where existing partitions have been removed leaving damaged or missing resilient tile flooring, patch to match existing floor tile.

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G. Ceilings: Patch acoustic lay-in ceiling where partitions have been removed. The transition between the different ceiling heights shall be affected by continuing the higher ceiling level over to the first runner on the lower ceiling and closing the vertical opening with a painted sheet metal strip.

H. Electrical:

1. Cut off concealed or embedded conduit, boxes, or other materials a minimum of 3/4 inch below final finished surface.
2. When removing designated equipment, conduit and wiring may require rework to maintain service to other equipment.
3. Rework existing circuits, or provide temporary circuits as necessary during renovation to maintain service to existing lighting and equipment not scheduled to be renovated. Existing equipment and circuiting shown are based upon limited field surveys. Verify existing conditions, make all necessary adjustments, and record the Work on the Record Drawings. This shall include, but is not limited to, swapping and other adjustments to branch circuits and relocation of branch circuit breakers within panelboards as required to accomplish the finished work.
4. Reuse of existing luminaires, devices, conduits, boxes, or equipment will be permitted only where specifically indicated.
5. Raceways and cabling not scheduled for reuse.
6. Inaccessibly Concealed: Cut off and abandon in place.
7. Exposed or Concealed Above Accessible Ceilings: Remove.
8. Raceways and Cabling Scheduled for Future Use: Cap/seal and tag.
9. Relocating Equipment: Extend existing wiring or run new wiring from the source.
10. Where the existing raceway is concealed, the outlet box shall be cleaned, and a blank cover plate installed.
11. Where the concealed raceway is uncovered remove raceway (or extended to new location if appropriate).
12. Provide new typewritten panelboard circuit directory cards.

I. Universal Waste Lamps and Thermostats: Manage, contain, package, and label in strict accordance with 40 CFR 273.

3.02 PROTECTION

A. Building Occupancy: Refer to Section 01 31 13, Project Coordination, for specific requirements related to concurrent occupancy of facilities to be partially demolished.

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B. Dust and Debris Control:

1. Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.
2. Vacuum and dust the Work area daily.
3. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to vehicular traffic.

C. Traffic Control Signs: Where pedestrian and driver safety is endangered in the area of removal Work, use traffic barricades with flashing lights.

D. Existing Work:

1. Survey the site and examine the Drawings and Specifications to determine the extent of the Work before beginning any demolition or renovation.
2. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain the property of Owner; any Contractor-damaged items shall be repaired or replaced as directed by Engineer.
3. Provide temporary weather protection during interval between removal of existing exterior surfaces and installation of new to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
4. Ensure that structural elements are not overloaded as a result of or during performance of the Work. Responsibility for additional structural elements or increasing the strength of existing structural elements as may be required as a result of any Work performed under this Contract shall be that of the Contractor. Repairs, reinforcement, or structural replacement must have Engineer approval.
5. Do not overload pavements to remain.

E. Weather Protection: For portions of the building scheduled to remain, protect building interior and materials and equipment from weather at all times. Where removal of existing roofing is necessary to accomplish the Work, have materials and workmen ready to provide adequate and temporary covering of exposed areas so as to ensure effectiveness and to prevent loss.

F. Trees: Protect trees within the Site that might be damaged during demolition and are indicated to be left in place, by a 6-foot-high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or

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follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the Work shall be replaced in kind, as approved by the Engineer.

G. Facilities:

1. Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.
2. Floors, roofs, walls, columns, pilasters, and other structural elements that are designed and constructed to stand without lateral support or shoring and are determined by Contractor to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Engineer.
3. Protect all facility elements not scheduled for demolition.
4. Provide interior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities.

H. Protection of Personnel:

1. During demolition, continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site.
2. Provide temporary barricades and other forms of protection to protect Owner’s personnel and the general public from injury due to demolition Work.
3. Provide protective measures as required to provide free and safe passage of Owner’s personnel and the general public to occupied portions of the structure.

3.03 BURNING

A. The use of burning at the Site for the disposal of refuse and debris will not be permitted. Where burning is permitted, adhere strictly to federal, state, and local regulations.

3.04 RELOCATIONS

A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Clean all items to be relocated prior to reinstallation, to the satisfaction of Engineer. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by Engineer.

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3.05 TITLE TO MATERIALS

A. With the exception of the following list of salvaged equipment and materials, all items designated to be removed shall become the property of Contractor.

1. Multiparameter composition system (UU 69-6501, UU 69-6502) sensor probes, clean boxes and controllers:
   a. AE/AIT 6601, AE/AIT 6602, AE/AIT 6603.
   b. AE/AIT 6701, AE/AIT 6702, AE/AIT 6703.
   c. AE/AIT 6801, AE/AIT 6802, AE/AIT 6803.
   d. AE/AIT 6901, AE/AIT 6902, AE/AIT 6903.
2. Hydrocyclones: M69-4901, M69-4902, M69-4903.
3. Supplemental Carbon Pumps: P69-3001, P69-3002, P69-3003.
4. Prefabricated Reusable Insulation Covers, including those that can be retained for installation in the new ALP piping by the Contractor.
5. Supplemental Carbon Storage Tank discharge valve: FV69-5801.
6. Instrumentation associated with existing supplemental carbon system:
   a. Tank level sensor: LE 69-5601.
   b. Pressure Indicators: PI 69-6201, PI 69-6202, PI 69-6203.
   c. Pressure discharge switch: PE/PI/PSH -6202, PI 69-6203.
   d. PE/PI/PSH 69-6101 shall be retained for reinstallation by the Contractor in the discharge of the new MNU Pump P69-6603.
7. Valves and Instrumentation retained for relocation and reinstallation in the new system by the Contractor:
   a. FCV 69-1101, FCV 69-1102.
   b. FE/FIT 69-1101, FE/FIT 69-1102.
   c. TIT 69-1201, TIT 69-1202.

B. Title to equipment and materials resulting from demolition is vested in the Contractor upon approval by Engineer of Contractor's Demolition/Renovation Plan, and the resulting authorization by Engineer to begin demolition.

3.06 DISPOSITION OF MATERIAL

A. Do not remove equipment and materials without approval of Contractor's Demolition/Renovation Plan by Engineer.

B. Salvage equipment and material to the maximum extent possible.

C. Owner will not be responsible for the condition or loss of, or damage to, property scheduled to become Contractor's property after Engineer's authorization to begin demolition. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

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3.07 REUSE OF MATERIALS AND EQUIPMENT

A. Remove and store materials and equipment listed in Article Title To Materials to be reused or relocated to prevent damage, and reinstall as the Work progresses.

B. Properly store and maintain equipment and materials in same condition as when removed.

C. Store equipment and material designated to be reused in a location designated by Resident Engineer.

D. Equipment and material designated to be reused shall be cleaned, serviced and checked for proper operability before being put back into service.

E. Engineer will determine condition of equipment and materials prior to removal.

3.08 UNSALVAGEABLE MATERIAL

A. Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed offsite to a recycling center.

B. Combustible material shall be disposed of off the Site.

3.09 CLEANUP

A. Debris and rubbish shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

END OF SECTION

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SECTION 02 64 02
EXISTING PRODUCTS

PART 1 GENERAL

1.01 DEFINITIONS

A. Existing Products: Products that are part of the existing systems in Building 69 and will be retained and incorporated in the Centrate Pretreatment Project after cleaning, inspection and refurbishing by the Contractor, as specified herein.

B. Transfer: the time when the products have been jointly inspected by the Owner and the Contractor; damage or loss has been reported in writing to the Engineer; pre-transfer report submittals have been reviewed and approved; products are accessible to Contractor; and Owner and Contractor have accepted such products as ready for handling, refurbishment, storage, and protection by the Contractor. At that time, Contractor assumes responsibility for handling, storage, coordination, installation, testing and startup of the products.

C. In-kind Replacement: Replacement of existing products with new product of same or manufacturer, model and functions, or equal approved by Owner's; in addition to the products specified for "in-kind" replacement in this Section, the Owner may also authorize in-kind replacement of other existing products under the "Owners-Allowance" item defined in the Conditions of the Contract.

1.02 EXISTING PRODUCTS

A. Contractor shall clean retained pipes, equipment, accessories and appurtenances within the limits of Building 69, including, but not limited to:

1. Dewatering centrate.
2. Plant (W3)/potable (W1)/and nonpotable(W2) water.
3. Centrate pretreatment effluent.
4. Heat-exchanger recycle.
5. Process and line drains.
6. Chemicals: Sodium Hydroxyde, Sodium Hypochlorite and Micronutrients.

B. Contractor shall coordinate mechanical, electrical and instrumentation appurtenances in Building 69 to achieve installation and operation of the existing products and provide a complete and functional system.

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C. Contractor shall provide Manufacturer's services for the equipment listed in the Refurbished and In-Kind Replacement Products Schedule at the end of this Section. These services shall include:

1. Inspection and refurbishing or replacement as specified herein.
2. Issue Certificates of Proper Installation.
3. Assist Contractor to conduct field testing.
4. Training.

D. Contractor shall be responsible for overall scheduling of equipment handling, including shipping from and to the Site.

E. The Contractor shall repair or replace products that become damaged or lost after transfer to the Contractor.

1.03 SUBMITTALS

A. Informational Submittals:

1. Pre-Transfer Inspection Report.
2. Post-Transfer Inspection and Refurbishing Report.
3. Functional Test Report.
4. Performance Test Report.
5. Certificates of Proper Installation.
6. Manufacturer's Training Plan.

1.04 TRANSFER REPORT

A. Pre-Transfer Inspection Report: describing condition of existing products. Report should include the following information for each product:

1. Tag Number.
2. Product category.
3. Serial number (if applicable).
4. Quantity.
5. Photographs as needed, to document current condition.
6. Description of condition (including description of existing damage, operability, etc.).
7. Manufacturer's instructions for inspecting, disassembling, handling, storage and protection have been received.
8. A written statement indicating that Contractor has obtained and reviewed manufacturers' instructions and is ready for the transfer of the Existing products.

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B. Post-Transfer Inspection and Refurbishing Report; should include the following information for each product:

1. Tag Number.
2. Product category.
3. Serial number (if applicable).
4. Quantity.
5. Manufacturer's representative description of condition.
6. Photographs, as needed, to document current condition.
7. Manufacturer's representative report on inspection and refurbishing products and services.
8. Manufacturer's representative proposal to provide additional services, or replace the existing products, in part or in their entirety, including shipping and handling to the Project site.
    a. If replacement will not be made in-kind, provide specifications and product description for Owner review.
    b. Effort should be made to provide replacements in kind. Substitutes will only be acceptable when replacements in kind are not available.

1.05 INSPECTION AND REFURBISHING

A. Overflow Tank (ex-Daughter Reactor) Mixer: The complete mixer assembly, including motors, shall be shipped to the location designated by the Manufacturer's representative for complete refurbishing, which will include, but not be limited to, recording and reporting equipment condition through photos, tear down disassembly, and a spin test performed on the mixer, mechanical observation, mixer gear replacement, surface preparation and coating using manufacturer's standard paint.

B. Existing Heat Exchanger and Drain Pumps: The complete pump assemblies, including motors, shall be shipped to the location designated by the Manufacturer's representative, where they will be disassembled, power washed, and visually inspected for defects in areas including, but not limited to, the pump shaft, bearings, and impeller. Mechanical seals and elastomer components will be replaced, and the bearings will be replaced and greased. Other parts found to be defective during the inspection will also be replaced pending Owner's approval.

C. Existing Heat-Exchangers: The complete assemblies shall be shipped to the location designated by the Manufacturer's representative, where they will be disassembled, gaskets removed, plates pressure-washed and a chemically cleaned and visually inspected with a dye penetrant. The plates shall be rinsed after the dye penetrant test and all plates that fail either inspection shall be replaced. The refurbished and new plates shall be packed into new gaskets. The frame shall also be power washed and inspected for defects. All minor defects found on the frame

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shall be repaired. The gasket will be reinstalled, and the frame shall be closed, and hydraulically tested prior.

D. After the refurbishing products are returned to the Site, Contractor shall conduct with Owner or Engineer a joint inspection for the purpose of identifying product, general verification of quantities, and observation of apparent condition. Such inspection will not be construed as final or as receipt of any product that, as a result of subsequent inspections and tests, are determined to be nonconforming.

1.06 IN-KIND REPLACEMENT

A. CPT Reactor 1 and 2 Mixers: replacement of the complete mixer assembly, including motors, gear reducers, shaft, impeller, pedestal and in-tank limiting rings.

1.07 MULTI-PARAMETER COMPOSITION SENSOR SYSTEM REPLACEMENT

A. The Contractor shall provide a new, upgraded complete replacements of the instrumentation system, including sensors, controllers, and accessories, and replace existing wiring between MCSS to PLC-69 with data links.

B. A total of 10 sensors shall be installed through either retained or new vertical stilling wells, and as shown on Drawings.

C. Accessories: As required for a complete functional system, including but not limited to sunshields for controllers, clean box systems for each sensor, sensor holders/brackets, cables, adaptors, chains, locks, and supports.

D. Manufacturer and Models: YSI Xylem Analytics:

1. Controls:
   a. UU 69-6501, UU 69-6502: MIQ/TC 2020 3G Controller and MIQ/MC3EtherNet IP.
2. Sensors:
   a. AE 69-6701, AE 69-6702: SensoLyt 700IQ.
   b. AE 69-6801, AE 69-6802: AmmonLyt Plus 700 IQ.
   c. AE 69-6901, AE 69-6902: NitraVis 701 IQ.
   d. AE 69-6501, AE 69-6502: TetraCon 700.
   e. AE 69-6601, AE 69-6602: FDO 700 IQ.

1.08 WARRANTY

A. The Contractor shall guarantee all materials and workmanship for a period of 18 months from the date of final acceptance of Work. If the equipment should fail during the warranty period due to a defect in workmanship, design or material, the

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manufacturer shall replace the affected parts required to restore equipment to service.

1.09 HANDLING, STORAGE AND MAINTENANCE

A. Subsequent to transfer, Contractor shall have complete responsibility for handling existing products, including storage and maintenance of the product until final acceptance of completed work.

B. Damage to or loss of products after date of transfer to Contractor shall be repaired to original condition, or replaced with new identical products, at the discretion of Engineer.

C. Maintain complete inventory of all existing products after their transfer to Contractor.

1.10 SPARE PARTS

A. One spare for each type of sensor specified under the multiparameter composition sensor system.

B. As recommended by the manufacturers for 2 years of operation.

1.11 ACCESSORIES

A. Equipment Identification Plate: 16-gauge stainless steel with 1/4-inch die-stamped equipment tag number securely mounted in readily visible location.

B. Lifting Lugs: for all equipment weighing over 100 pounds.

C. Anchor Bolts: Type 316 stainless steel, sized by equipment manufacturer, and as specified in Section 05 50 00, Metal Fabrications. Coat in accordance with Section 09 90 00, Painting and Coating.

D. Guards: Rotating parts external to the tanks shall be provided with guards in accordance with OSHA standards.

1.12 PAINTING

A. Mixers:

1. Nonwetted parts: factory prepared and primed and painted in accordance with Section 09 90 00, Painting and Coating, System No. 5.
2. Wetted parts shall be Type 316 stainless steel.

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PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in conformance with Manufacturer's installation instructions.

B. Clean existing connected piping and tanks, and ancillary equipment, valves and instrumentation.

C. Install product and connect to structures, other equipment, piping, electrical and instrumentation work, finish painting, and appurtenances to achieve a complete and functional system.

D. Anchor Bolts:

1. Where required, replace anchor bolts, fasteners, washers, and templates needed for installation of existing products.
2. Size and locate anchor bolts in accordance with existing product installation instructions.

E. Mechanical and electrical equipment shall be properly aligned, plumb and level, with no stresses on connecting piping or conduit.

F. Verify direction of motor rotation before starting equipment drives.

G. Verify operability and safety of electrical system needed to operate equipment. Check electrical system for continuity, phasing, grounding, and proper functions.

3.02 CLEANING

A. Provide water, temporary pumps, piping, valves, strainers and fittings as required to clean retained pipes.

B. Flush pipelines with water at 2.5 fps minimum flushing velocity until foreign matter is removed. If impractical to flush large diameter pipe at 2.5 fps, clean in-place from inside by brushing and sweeping, then flush or blow line at lower velocity.

C. Insert cone strainers in flushing connections to attached equipment and leave in-place until cleaning is complete.

D. Store water and drainage in the CPT Overflow Tank until authorized by Owner to discharge via the CPT Drain pump discharge line.

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3.03 FIELD FINISHING

A. Repaint as specified in Section 09 90 00, Painting and Coating System.

B. Touch up or repair damage to coatings resulting from unloading, storage, installation, testing, and startup.

C. Touch up, repair, or complete repainting shall match color of original paint, and shall be fully compatible with applied primers and finish.

3.04 PRODUCT PROTECTION

A. Immediately after installation, lubricate components in accordance with manufacturer's instructions.

B. Follow manufacturer's instructions for protection and maintenance during storage, after installation but prior to testing and startup, and after startup but prior to acceptance.

C. Furnish incidental supplies including lubricants, cleaning fluids, and similar products as needed for protecting and maintaining the existing products.

3.05 FIELD TESTING

A. Perform tests and inspections of installed products in accordance with requirements shown herein, Section 01 91 00, Equipment Systems Commissioning, and manufacturer's instructions.

B. Mixers:

1. Functional Tests: Conduct on each mixer, including the refurbished unit.
    a. Alignment Test: Test each unit after installed and aligned; the gear reducer shall run at full speed and load for a minimum of 2 hours after the oil temperature has stabilized.
        1) The following shall be recorded during steady state operation:
            a) Overall sound pressure shall be measured per ANSI/AGMA 6025-C90.
            b) Lubricant temperature in the oil sump of the gear reducer.
        2) The following requirements shall be met:
            a) The sound pressure shall not exceed 85dBA when measured 5 feet from the gear reducer.
            b) The temperature rise in the lubricant temperature shall but exceed 100 degrees F above ambient.
    b. Vibration Test: Test each gear and motor after alignment test is passed; test in the X. Y, Z directions.

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1) The following requirement shall be met: Vibration frequency less than 0.28 inch/second in any direction.

2. Performance Test:
   a. Homogeneity Test: Conduct on one of the in-kind replacement CPT Reactors.
      1) Test in the presence of the Engineer and after one of the CPT reactors have been in normal operating mode for at least 2 days, at high water level, with MLSS in the typical operating range of 2,000 to 5,000 mg/L and well mixed by use of the aeration system.
      2) Collect three samples from three sites in the CPT Reactor at 18 inches from surface, mid-depth and 12-inches above the tank bottom; all sites shall be a minimum of 18 inches away from any structure in the tank.
      3) Calculate the coefficient of variation (Cv), as 100xStandard Deviation of all nine samples/Mean Value of Nine Samples.
      4) If the Cv is greater than 10 percent, the Contractor/manufacturer shall make all necessary improvements at no additional cost to the Owner and repeat the testing until the Cv is less or equal to 10 percent.

C. Heat Exchanger:

1. Functional Test: Conduct on each unit.
   a. Verify any blocking and bracing used during shipping are removed.
   b. Verify heat exchanger is secure on mountings and supporting devices, and connection to pipes and electrical components are complete.
   c. Verify cleaning and adjusting are complete.
   d. Verify that the basket strainer is cleaned and installed prior to first startup.
   e. Check control valve and vacuum breaker, if provided, for proper operation.
   f. Check that design flow and pressure differential have been achieved.
      1) Design values listed Supplement O&M included herein.
      2) Pressure differential: measured by plant instrumentation.
      3) Flow output: measured by a temporary calibrated flowmeter provided by Contractor.
   g. Verify that there are no leaks.
2. Performance Test: Conduct on one of the units.
   a. After CPT process has been activated, check that flow, pressure differential, and temperature differentials have been achieved.
   b. Check modulating systems throughout range of modulation. Adjust PID loops to ensure modulation is smooth and responsive.
   c. Test and adjust control safeties.

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d. Replace damaged and malfunctioning equipment/gaskets.
e. Verify that there are no leaks.

D. Drain and Heat Exchanger Pumps:

1. Functional Test: Conduct on each pump:
   a. Test complete assemblies for correct rotation, proper alignment and connection, and quiet operation.
   b. Vibration Test:
      1) Test with unit installed and in normal operation and discharging to the connected piping systems at rates between low discharge head and high discharge head conditions specified and with actual building structures and foundations shall not develop vibration exceeding 80 percent of the limits specified in HIS 9.6.4.
      2) If units exhibit vibration in excess of the limits specified, adjust or modify as necessary. Units which cannot be adjusted or modified to conform as specified shall be replaced.
   c. Flow output: Measure design flow and pressure:
      1) Design values listed Supplement O&M included herein.
      2) Pressure differential: measured by plant instrumentation.
      3) Flow output: Heat Exchanger Pump flows measured by a temporary non-intrusive or clamp-on flowmeter provided by Contractor; Drain Pump flow measured by plant instrumentation.
2. Performance Test: Conduct on each pump:
   a. Perform under simulated operating conditions.
   b. Test for a continuous 3-hour period without malfunction.
   c. Test log: Record the following:
      1) Total head.
      2) Capacity.
      3) Flow measured by factory instrumentation and storage volumes.
      4) Average distance from suction well water surface to pump discharge centerline for duration of test.
      5) Pump discharge pressure converted to feet of liquid pumped and corrected to pump discharge centerline.
      6) Calculated velocity head at the discharge flange.
      7) Field head.
      8) Driving motor voltage and amperage measured for each measurement.

E. Instrumentation: Calibration, functional and performance test per manufacturer’s instructions.

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3.06 MANUFACTURER'S SERVICES

A. Per Section 01 43 33, Manufacturers' Field Services and Section 01 91 00, Equipment Systems Commissioning, shall provide the following:

1. Manufacturer's Certificates of Proper Installation.
2. Training.
3. Other onsite services, requiring on site presence of each manufacturer for a minimum person-days listed below, travel time excluded:
   a. 2 person-days per system for assistance during product installation, inspection, checking and adjustment.
   b. 2 person-days for functional and performance testing.
   c. 2 person-days for facility startup.

3.07 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this Specification.

1. Schedule for Refurbished and In-Kind Replacement Products.

2. Excerpt from CPT Heat Exchanger Pumps O&M Manual, February 2013.

3. Excerpt from CPT Drain Pumps O&M Manual.

4. Excerpt from Heat Exchangers O&M Manual, June 2012.

5. Excerpt from Mixers O&M Manual, November 2012.

END OF SECTION

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Schedule for Refurbished and In-Kind Replacement Products					
Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Purchase Order Number**	**Installation Date**
Heat Exchanger	Alfa Laval	M15-MFG	30113-91910	11004-04	6/2012
Heat Exchanger	Alfa Laval	M15-MFG	30113-91911	11004-04	6/2012
Heat Exchanger Pump	ITT Goulds	4C6-13	B780F460-1-2	X1406B01	12/7/2012
Heat Exchanger Pump	ITT Goulds	1.5X2-8	B780F461	X1406B01	12/7/2012
CPT Reactor Mixer 1	Philadelphia Mixing Solutions	Raven 3855M	11DEM0858	11004-16	8/1/2013
CPT Reactor Mixer 2	Philadelphia Mixing Solutions	Raven 3855M	11DEM0859	11004-16	8/1/2013
CPT Reactor Mixer 3	Philadelphia Mixing Solutions	Raven 3853M	11DCM0860	11004-16	8/1/2013
CPT Drain Pump	Peerless	3x4-8 MTP8196	9927053265-10-A	11004-063	8/14/2012

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Project:
ASA Package B

X1406DE0
Rev. 0

Final Operations and Maintenance Manual

Section 44 42 56.22: Inline Vertical Pumps

Prepared For:
CPP Construction Co., Inc.
362-B Christopher Avenue
Gaithersburg, MD 20879
Purchase Order No: 11004-028

February 28, 2013

Local Representative/Supplier:

Geiger Pump & Equipment Co.
8924 Yellow Brick Road
Baltimore, Maryland 21237
Telephone: (410) 682-2660
Fax: (410) 682-4750

GEIGER

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Project: ASA Package B
44 42 56.22: Inline Vertical Pumps
CPP Job # 11004-028

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JACOBS®

Jacobs Engineering Group
330 Hooffs Run Drive
Alexandria, VA 22314
Phone: 706.519.0176
Fax: 703.519.3614

Pkg B-Centrate Pretreatment Facility
Project No: 10-12
Package No:

SUBMITTAL ITEM NO. 444256.22.003

TITLE:	INLINE VERT PUMPS O&M	**REQUIRED START:**	11/5/2012
FINAL STATUS:	RNR	**REQUIRED FINISH:**	12/7/2012
BIC:		**DAYS HELD:**	0
		DAYS ELAPSED:	31
		DAYS OVERDUE:	-1

Spec'd Manufacturer:

RECEIVED FROM	SENT TO	RETURNED BY	FORWARDED TO
			CPP D_S

Rev.	Description / Remarks	Sepias	Prints	Received	Due	Forwarded	Returned	Status	Elapsed	Held
A		0	0	11/5/2012	12/7/2012	12/6/2012	12/6/2012	RNR	31	0

Rvwr No.	Description / Remarks	Reviewer	Amt	Date Due	Forwarded	Returned	Reviewer Status	Elapsed	Held
1		CPP - D_S		11/5/2012	11/5/2012	12/6/2012	NEW	31	0
2		JEG - A_G		11/5/2012	11/5/2012	12/6/2012	PND	31	0
3		CH2M - SS		12/6/2012	12/6/2012	12/6/2012	RNR	31	0

1. We acknowledge that the submittal was on the O&M Manual and not on Pump Test Curves as described on the transmittal letter on the submittal.

2. Please provide contact information of supplier on the title page.

3. Put the Section-TOC's after the fly-leaf with tab labeled with the section number. (Submitted version has TOC of the following section at the end of prior section.)

4. Include "Maintenance Summary Form" (Section 01 78 23, Paragraph 1.06.C)

5. Please include illustrations, data and drawings, with specific products identified, from the approved pump submittal in the O&M Manual.

6. Include Manufacturer's Warranty (Section 44 42 56.10, Paragraph 1.04).

7. Include Manufacturer's Certification of Compliance (Section 44 42 16.10, Paragraph 1.03.B).

8. Confirm that all required electrical documents have been included in the O&M Manual (Section 44 42 56.10, Paragraph 1.03.A.e; and Section 01 78 23, Paragraph 1.06.B)

4		JEG - A_G		12/7/2012	12/6/2012	12/6/2012	RNR	31	0

Response to O&M Review Comments

Project: ASA Package B
Section: 44 42 56.22: Inline Vertical Pumps
January 29, 2012
Page 1 of 1
ITT Goulds/Geiger Pump

We offer the following response to the review comments dated December 6, 2012 (see attached). Response numbers match up with the original comment numbering.

1. Comply.
2. Comply.
3. Comply.
4. Comply.
5. Comply.
6. Comply.
7. Comply.
8. Comply.

AUTHORIZED SERVICE FACILITY

The local authorized facility for field service, repair, and spare parts is:

Geiger Pump and Equipment Co.
8924 Yellow Brick Road
Baltimore MD 21237

Phone: 410 682-2660
Fax: 410 682-4750
Email: info@geigerinc.com

In the event of failure, for warranty services contact the above Authorized Service Facility.

SCOPE OF SUPPLY

Section 44 42 56.22: Inline Vertical Pumps

Heat Exchanger Pump 1 and 2/Tag Nos. M69-3001, M69-3002: Two (2) ***Goulds*** vertical in-line centrifugal ANSI-standard pumps, each with 6" flanged suction, 4" flanged discharge, ductile iron construction, 316SS and shaft sleeve, cartridge mechanical seal, taper-bore seal box, coupling and guard, and 10 Hp TEFC inverter duty c-face motor.

Heat Exchanger Pumps 3/Tag No. M69-3003: One (1) ***Goulds*** vertical in-line centrifugal ANSI-standard pump, each with 2" flanged suction, 1.5" flanged discharge, ductile iron construction, 316SS shaft and shaft sleeve, cartridge mechanical seal, taper-bore seal box, coupling and guard, and 2 Hp TEFC inverter-duty c-face motor (460VAC/3ph/60Hz). One (1) set of spare parts will be provided.

Note: Motor will be 1800 rpm.

Not included are installation, piping, fittings, controls, relays, wiring, **anchor bolts**, **lubricants**, tools, field alignment, field testing or associated test equipment, field vibration testing, video equipment/taping, or any other items not specifically included by the scope of this proposal.

ALEXANDRIA SANITATION AUTHORITY PACKAGE B

MAINTENANCE SUMMARY FORM

PROJECT: ASA Package B CONTRACT NO.: 10-12

1. EQUIPMENT ITEM: Inline Vertical Pumps
2. MANUFACTURER: ITT Goulds
3. EQUIPMENT/TAG NUMBER(S):
4. SERIAL NUMBERS(S): S/N 4X6-13 B780F460-1-2 S/N 1.5X2-8 B780F461
5. WEIGHT OF INDIVIDUAL COMPNENTS:1.5X-8 347LBS 4X6-13 1173.5LBS
6. OPERATING PARAMETERS/ NAMEPLATE DATA (hp, voltage, speed, TDH, gpm, impeller size/type, copy of pump curve, seal type and size, etc.):
   See Attached
7. EQUIPMENT MSRP:
8. DATE OF SERVICE:
9. WARRANRTY INFORMATION: 5 Year Warranty. Geiger Pump & Equipment 8924 Yellow Brick Road Baltimore, MD 21237
10. LUBRICANT LIST (include environmentally friendly products, if applicable): Grease
11. MANUFACTURER'S LOCAL REPRESENTATIVE:
    a. Name Geiger Pump & Equipment Telephone No. 410-682-2660
    b. Address 8924 Yellow Brick Rd. Baltimore, MD 21237
12. ALTERNATIVE PARTS SUPPLIER (if applicable):N/A
13. MAINTENANCE REQUIREMENTS:

Pumps	**Frequency**
Bearing Lubrication	Routine Maintenance
Seal Monitoring	
Vibration Analysis	
Discharge Pressure	
Temperature Monitoring	
Inspections	**Frequency**
Routine	• Check Level and Condition of oil through sight glass on bearing frame • Check for unusual noise, vibrations and bearing temperatures • Inspect pump and piping for leaks • Check seal chamber/Stuffing box leakage

3 Months	• Check the foundation and the hold-down bolts for tightness • If the pump has been left idle, check the packing • Oil should be changed at least every 3 months (2000 hours) • Check the shaft alignment
Annual	• Check the pump capacity, pressure and power
Intervals	• Inspection intervals should be shorted appropriately if the pumping is abrasive and/or corrosive.

Motors	**Frequency**
Bearings	Routine Maintenance
Insulation Resistance Check	Every 5,000 hours of operation
Cleaning	Reguarly

14. LUBRICANT LIST

Pump Lubricant List

Bearings	Every 2000 operating hours or 3 months	NLGI Consistency 2	Exxon Unires N2	Mobile Mobilux EP2	Sunoco Multipurpose EP	SKF LGMT 2
Stuffing Box	Periodically					

For more detailed information see the Pump O&M,

Motor Lubricant List

Bearings	Relubricate every 6 months (more often if conditions require)	Grease should be compounded polyurea base and good grade petroleum oil	No. 2 Consistency

For more detailed information see the Motor O&M

15. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part Number	Description	Unit	Quantity	Price*
8055-30930	Bearing	Each	1	$235.00
8050-30961	Bearing	Each	1	$107.00
70782 28 5127	Gasket	Each	1	$41.50
C02495A28 6359	O-Ring	Each	1	$11.00
C02495A2455302	O-Ring	Each	1	$18.00
73705X-2229	Shaft Sleeve	Each	1	$339.00
49568 118 2213	Key	Each	1	$10.00
C2CPX1750EAXVB	Mechanical Seal	Each	1	$1262.00

*Prices subject to change

16. EQUIPMENT SUMMARY CHART FOR OWNER'S INVENTORY

Equipment	Tag Number	Serial Number
Inline Vertical Pump 4X6-13	Heat EX 1-2 M69-3001/ M69-3002	B780F460-1-2
Inline Vertical Pump 1.5X2-8	Heat EX 3 M69-3003	B780F461

CPP Construction Co., Inc.
ASA Package B
44 42 56.22: Inline Vertical Pumps
CPP Job # 11004-028

Nameplate Data 4X6-13

PUMP

Customer: CPP Construction Co., Inc.	Liquid: Water
Location:	SN: BF780F460
Type: Inline Vertical	Seal Type: Flowserve ISC2PX1375EAXOB
Size: 4X6-13	Shaft Sleeve:
Flow (gpm): 590.0	Pump Material:
Head (ft): 33.0	Rotation: RPM: Clockwise

MOTOR

Type: Inverter Duty	Horsepower:10.0
Frame Size: 256TC	Volts: 460
Variable Speed or Constant Speed	Phase: 3
Service Factor: 1.15	Hertz: 60

CPP Construction Co., Inc.
ASA Package B
44 42 56.22: Inline Vertical Pumps
CPP Job # 11004-028

Nameplate Data 1.5X2-8

PUMP

Customer: CPP Construction Co., Inc.

Location:

Type: Inline Vertical

Size: 1.5X2-8

Flow (gpm): 50.0

Head (ft): 35.0

Liquid: Water

SN: BF780F461

Seal Type: Flowserve ISC2PX1375EAXOB

Shaft Sleeve:

Pump Material:

Rotation: RPM: Clockwise

MOTOR

Type: Inverter Duty

Frame Size: 145TC

Variable Speed or Constant Speed

Service Factor: 1.15

Horsepower: 2.0

Volts: 460

Phase: 3

Hertz: 60

OPERATION AND MAINTENANCE DATA

Project
Alexandria Sanitation Authority Package B

Customer
CPP Construction Co., Inc.

Specification Section
44 42 56.10

Customer P.O. Number
11004-063

Equipment Name & Tag No.
Recycle Pump 1: M69-4601
Recycle Pump 2 : M69-4602
Recycle Pump 3 : M69-4603
Recycle Pump (Shelf Spare) : N/A
Drain Pump : M69-5201

Supplier
STH INC
97-C Monocacy Blvd
Frederick, MD 21701
301-682-3390

STH, Inc.
Shafer, Troxell & Howe, Inc.
Your Solutions Partner in MD, DC, VA, DE and WV since 1973

OPERATION AND MAINTENANCE DATA

Alexandria Sanitation Authority Package B

Recycle Pump 1-3 & Spare: M69-4601, M69-4602, M69-4603

Drain Pump : M69-5201

(Spine)

OPERATION AND MAINTENANCE DATA

Project
Alexandria Sanitation Authority Package B

Customer
CPP Construction Co., Inc.

Specification Section
44 42 56.10

Customer P.O. Number
11004-063

Equipment Name & Tag No.
Recycle Pump 1: M69-4601
Recycle Pump 2 : M69-4602
Recycle Pump 3 : M69-4603
Recycle Pump (Shelf Spare) : N/A
Drain Pump : M69-5201

Supplier
STH INC
97-C Monocacy Blvd
Frederick, MD 21701
301-682-3390

Table of Contents

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2.	Recycle Pump: Warranty	7
3.	Drain Pump: Maintenance Summary Form	9-14
4.	Drain Pump: Warranty	15
5.	Recycle Pump: Data Sheets (submittal docs)	17-56
6.	Drain Pump: Data Sheets (submittal docs)	57-88
7.	Recycle Pump: Factory Test Reports	89A-D
8.	Drain Pumps: Factory Test Reports	90
9.	Recycle Pump: Field Test Reports	TBD
10.	Drain Pump: Field Tests Reports	TBD
11.	Recycle Pump & Drain Pump: Installation, Operation, and Maintenance Manual, ANSI Standard Process Pump Series 8196	93-138
12.	Recycle Pump Motor & Drain Pump Motor: Installation, Operation, and Maintenance Manual, ANSI Standard Process Pump Series 8196	139-166

ALEXANDRIA SANITATION AUTHORITY PACKAGE B

Recycle Pumps

MAINTENANCE SUMMARY FORM

PROJECT: Alexandria Sanit Auth Pkg B CONTRACT NO.:

1. EQUIPMENT ITEM: Process Pump
2. MANUFACTURER: Peerless Labour Taber
3. EQUIPMENT/TAG NUMBER(S): M69-4601, M69-4602, M69-4603
4. SERIAL NUMBER(S): N/A at this time
5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS):
6. OPERATING PARAMETERS/NAMEPLATE DATA (hp, voltage, speed, TDH, gpm, impeller size/type, copy of pump curve, seal type and size, etc.): 50 GPM @ 74' TDH
   5HP, 460V, 3 Ph, 1800 RPM, 8.33" Impeller, Mechanical
7. EQUIPMENT MSRP: $8,700.00
8. DATE OF SERVICE: N/A
9. WARRANTY INFORMATION (time period and contact information):
   See Attached
10. LUBRICANT LIST (include environmentally friendly products, if applicable):
    Exxon Teresstic 68 (ET68)
11. MANUFACTURER'S LOCAL REPRESENTATIVE:
    a. Name STH Inc Telephone No. 301-682-3390
    b. Address 97C Monocacy Blvd Frederick MD 21701
12. ALTERNATIVE PARTS SUPPLIER (if applicable): N/A
13. MAINTENANCE REQUIREMENTS:

Maintenance Operation Comments	**Frequency**	**Lubricant (If Applicable)**
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.
Observe Oil Level (Section IV)	Daily/Weekly	-
Re-Grease Bearings	every 2000 hrs	ET68
Visually inspect pump for leaks	Daily/Weekly	-
Check foundation bolts	Periodically	-
Check for Noise/Vibration	Periodically	-

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14. LUBRICANT LIST

Reference Symbol	Shell	Exxon Mobile	Chevron Texaco	BP Amoco	Or Equal
List symbols used in No. 10 above.	List equivalent lubricants, as distributed by each manufacturer for the specific use recommended.				
ET68		DTE-Med	Regal R&O		

15. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY.

Part No.	Description	Unit	Quantity	Unit Cost
96885056	Maintenance	Kit	1	$112.75

Note: Identify parts provided by this Contract with two asterisks.

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16. EQUIPMENT SUMMARY CHART FOR OWNER'S INVENTORY.

Equipment	Tag Number	Serial Number	MSRP
Recycle Pump	M69-4601		$8,700.00
Recycle Pump	M69-4602		$8,700.00
Recycle Pump	M69-4603		$8,700.00

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WARRANTY

New equipment manufactured by Peerless Pump Company (Seller) is warranted to be free from defects in material and workmanship under normal use and service for a period of one year from date of shipment, Seller's obligation under this warranty being limited to repairing or replacing at its option any part found to be so defective provided that such part is, upon request, returned to Seller's factory from which it was shipped, transportation prepaid.

This warranty does not cover parts damaged by decomposition from chemical action or wear caused by abrasive materials, nor does it cover damage resulting from misuse, accident, neglect, or from improper operation, maintenance, installation, modification, or adjustment.

This warranty does not cover parts repaired outside Seller's factory without prior written approval. Seller makes no warranty as to starting equipment, electrical apparatus or other material not of its manufacture, since the same are usually covered by warranties of the respective manufacturers thereof.

In the event, notwithstanding the terms of this agreement, it is determined by a court of competent jurisdiction that an express warranty has been given by Seller to Purchaser with respect to the head, capacity or other like performance characteristics of said equipment, Seller's liability for breach of the same shall be limited to accepting return of such equipment F.O.B. plant of manufacture, refunding any amount paid thereon by Purchaser (less depreciation at the rate of 15% per year if Purchaser has used equipment for more than thirty (30) days) and canceling any balance still owing on the equipment.

Peerless Pump Company in no event will be liable for indirect or consequential damages.

This warranty is expressly in lieu of any other warranties, expressed or implied, and seller specifically disclaims any implied warranty of merchantability or fitness for a particular purpose.

Peerless Pump Company
2005 Dr. Martin Luther King Jr. Street
Indianapolis, Indiana 46207-7026
Ph: (317) 925-9661 • Fax: (317) 924-7388
www.peerlesspump.com • www.labourtaber.com • www.epumpdoctor.com

2 YEAR EXTENDED WARRANTY

Peerless Pump Company shall warrant the equipment for a period of (1) year from the date of shipment per Peerless Pump Company standard factory warranty letter. STH, as Peerless Pump Manufacturers Representative, shall extend the warranty to cover the shaft and bearings only for a period of (2) two years following the manufacturers warranty.

(Seller) is warranted to be free from defects in material and workmanship of said bearings and shafts under normal use and service for a period of (2) two years from date of shipment, Seller's obligation under this warranty being limited to repairing or replacing at its option any part found to be so defective provided that such part is, upon request, returned to Seller's factory from which it was shipped, transportation prepaid.

This warranty does not cover said parts damaged by decomposition from chemical action or wear caused by abrasive materials, nor does it cover damage resulting from misuse, accident, neglect, or from improper operation, maintenance, installation, modification or adjustment.

This warranty does not cover said parts repaired outside Seller's factory without prior written approval. Seller makes no warranty as to starting equipment, electrical apparatus or other material not of its manufacture, since the same are usually covered by warranties of the respective manufacturers thereof.

STH, in no event, will be liable for indirect or consequential damages.

This warranty is expressly in lieu of any other warranties, expressed or implied, and seller specifically disclaims any implied warranty of merchantability or fitness for a particular purpose.

ALEXANDRIA SANITATION AUTHORITY PACKAGE B

Drain Pump

MAINTENANCE SUMMARY FORM

PROJECT: Alexandria Sanit Auth Pkg B CONTRACT NO.:

1. EQUIPMENT ITEM: Process Pump
2. MANUFACTURER: Peerless Labour Taber
3. EQUIPMENT/TAG NUMBER(S): M69-5201
4. SERIAL NUMBER(S): N/A at this time
5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS):
6. OPERATING PARAMETERS/NAMEPLATE DATA (hp, voltage, speed, TDH, gpm, impeller size/type, copy of pump curve, seal type and size, etc.): 300 GPM @ 38.5' TDH
   15HP, 460V, 3 Phase,1800 RPM,7" Impeller, Mechanical Seal
7. EQUIPMENT MSRP: $11,395.00
8. DATE OF SERVICE: N/A
9. WARRANTY INFORMATION (time period and contact information):
   See Attached
10. LUBRICANT LIST (include environmentally friendly products, if applicable):
    Exxon Teresstic 68
11. MANUFACTURER'S LOCAL REPRESENTATIVE:
    a. Name STH Inc Telephone No. 301-682-3390
    b. Address 97C Monocacy Blvd Frederick MD 21701
12. ALTERNATIVE PARTS SUPPLIER (if applicable): N/A
13. MAINTENANCE REQUIREMENTS:

Maintenance Operation Comments	**Frequency**	**Lubricant (If Applicable)**
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.
Observe oil level (section IV)	Daily/Weekly	-
Regrease Bearings	2000 hours	-ET68
Visually inspect pump for leaks	Daily/Weekly	-
Check foundation bolts	Periodically	-
Check for noise/vibration	Periodically	-

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Alexandria Sanitation Authority Project
Plate Heat Exchangers
CPP Construction Company PO 11004-04
Tag nos: M69-4201, 4202, 4203
Spec section 444625
Model M15M-FG s/n 30113-91910, 91911
Model M6M FG s/n 30113-91912

Alfa Laval Inc.
5400 International Trade Drive
Richmond, VA 23231
USA
Tel: +1 804-222-5300
Fax: +1 804-236-1303
www.alfalaval.com

Operation and Maintenance Binder Index:

1, Drawings and plate arrangement/assembly information

2, Warranty statement

3, Factory Hydro Test Reports

4, Field Start up Documentation

5, Maintenance summary form

6, M15M O&M Manual

7, M6M O&M Manual

M15M-FG & M6M-FG
Heat Exchanger
Operation & Maintenance Manual

Alexandria Sanitation Authority
State of the Art Nitrogen Upgrade Program (SANUP) Package B – Centrate Pretreatment Facility and Final Effluent Flow Measurement

C.O. 415837

Plant Numbers
M69-4201, M69-4202, M69-4203

Spec. Section: 44 46 25

Alfa Laval Inc.
5400 International Trade Drive
Richmond, VA 23231
U.S.A.

June, 2012

M15M-FG & M6M-FG
Heat Exchanger
Operation & Maintenance Manual
Alexandria Sanitation Authority
State of the Art Nitrogen Upgrade Program
(SANUP) Package B – Centrate Pretreatment
Facility and Final Effluent Flow Measurement
C.O. 415837
Plant Numbers: M69-4201, M69-4202, M69-4203
Spec. Section: 44 46 25

Designed constructed and stamped in accordance with 2010 ASME Code and latest Addendum.

This is a general drawing. Additional parts. if required. like protection sheets. inspection covers. etc. are not displayed.

SUPPLIER

REF. 47436-10

ITEM NO. M69-4201, 4202

AGENT / REF. / 779920 Spec section 444625

CUSTOMER NAME / REF. NO. Cpp Construction Company / 11004-04

SIGN. TES

RISK CATEGORY N/A

M15-MFG

ASME

PLATE HEAT EXCHANGER

SERIAL NUMBER 30113-91910 to 30113-91911

DATE 2011-11-11

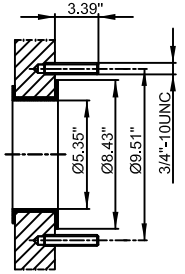
REV NO. 1

REMARKS:

	SIDE 1	SIDE 2
DESIGN PRESSURE	150 psi	150 psi
TEST PRESSURE	195 psi	195 psi
MAX TEMPERATURE	180 °F	180 °F
MIN TEMPERATURE	32 °F	32 °F
MAWP	150 psi	150 psi
MDMT	-20 °F	

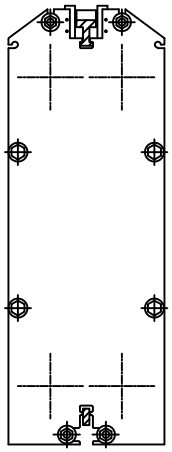
GASKET EPDMP CLIP-ON
PLATE MATERIAL ALLOY 316
PLATE THICKNESS 0.50 mm
HEATING SURFACE 340.4 ft²
PLATE GROUPING 1*26ML/1*26MH
WEIGHT WITH WATER 2713 lb
NETWEIGHT 2426 lb

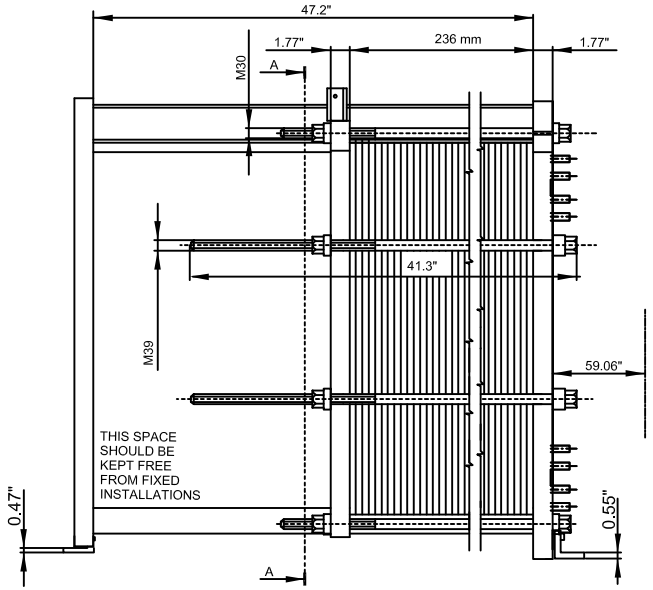
ASME 150#
SHEET LINING
SS
S1,S2,S3,S4

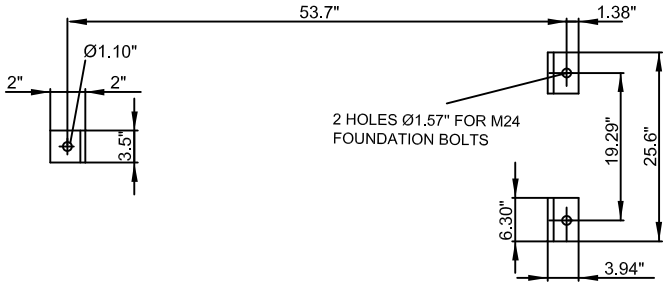


PRESSURE PLATE
(MOVABLE)

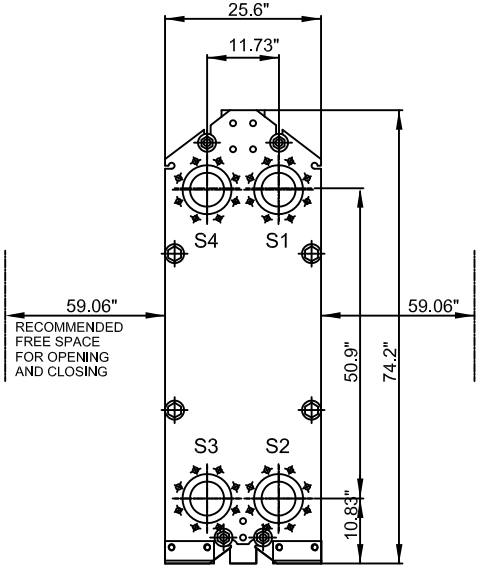
SECTION A-A







FRAME PLATE
(FIXED)



TOTAL LENGTH	57.3"
TOTAL WIDTH	25.6"
TOTAL HEIGHT	74.2"

Rev 1: Changed Inlet and Outlet locations

ALL DIMENSIONS IN INCHES

SIDE	MEDIA	INLET	TEMP.	OUTLET	TEMP.	FLOW RATE	PRESSURE DROP	LIQUID VOL.
1	Water	S1	94.5 °F	S2	89.4 °F	590.0 GPM	9.657 psi	2.35 ft³
2	Water	S3	78.8 °F	S4	86.7 °F	380.0 GPM	4.410 psi	2.35 ft³

30113-91910

Alfa Laval, Plate Heat Exchanger 2011-11-11
Channel Plate Installation Description

Customer:	Cpp Construction Company	SU Order No:	47436-10
Model :	M15-MFG	Serial No:	30113-91910 to 30113-91911
Customer PO:	11004-04	Item No:	M69-4201, 4202

	Hot side	Cold side
Plate material and Thickness:	ALLOY 316 0.50 mm	
A Dimension:	236 mm	
Grouping:	1*26ML	1*26MH
Sealing material:	EPDMP CLIP-ON	EPDMP CLIP-ON
Port Locations:	S1 -> S2	S3 -> S4
Connection material:	Stainless steel	Stainless steel

Port hole with flow on the gasketed side: U
Port hole sealed with O-ring: O
Plates are assembled with the gasket side facing the frame plate.

Plate no.	Plate code no.	Plate Pattern		Punched corner of the plate: upper left	lower left	lower right	upper right	Flow direction on the gasket side of the plate
				S1	S2	S3	S4	
	FRAME PLATE			=>=	=>=	=>=	=>=	
1	39506058 83	M15 M2	A	O	O	O	O	
2	39506047 03	M15 M1	B	U	U	O	O	Down
3	39506048 03	M15 M2	A	O	O	U	U	Up
4	39506047 03	M15 M1	B	U	U	O	O	Down
5	39506048 03	M15 M2	A	O	O	U	U	Up
6,	8, ... , 46	39506047 03	M15 M1 B					
7,	9, ... , 47	39506048 03	M15 M2 A					
48	39506047 03	M15 M1	B	U	U	O	O	Down
49	39506048 03	M15 M2	A	O	O	U	U	Up
50	39506047 03	M15 M1	B	U	U	O	O	Down
51	39506048 03	M15 M2	A	O	O	U	U	Up
52	39506047 03	M15 M1	B	U	U	O	O	Down
53	39506058 76	M15 M2	A					Up
	PRESSURE PLATE			T1	T2	T3	T4	

Article No:	Quantity:	Total
39506058 83	1	2
39506047 03	26	52
39506047 03	25	50
39506058 76	1	2
	53	106

Rev 1: Changed Port Location and Flow

O & M MANUAL

PROJECT

ALEXANDRIA SANITATION AUTHORITY AWTF SANUP PACKAGE B: CENTRATE PRETREATMENT FACILITY AND FINAL EFFLUENT FLOW MEASUREMENT

CUSTOMER

CPP CONSTRUCTION CO., INC.

SPECIFICATION SECTION

43 22 54.01 – MECHANICAL MIXERS

Equipment	Tag Number	Serial Number	Location
CPT Reactor Mixer 1	M-69-1401	11DEM0858	CPT Reactor No. 1
CPT Reactor Mixer 2	M-69-1402	11DEM0859	CPT Reactor No. 2
CPT Reactor Mixer 3	M-69-1403	11DCM0860	Daughter Reactor

CUSTOMER P.O. NUMBER

11004-16

EQUIPMENT TAG NO.

M69-1401, M69-1402 & M69-1403

PMSL ORDER NUMBER

56071

1221 EAST MAIN STREET
PALMYRA, PA 17078
PHONE: (717)832-2800
FAX: (717)832-1740

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Phone: 717.832.2800 • Fax: 717.832.1740
www.philamixers.com

November 29, 2012

Dereck Smith
CPP Construction
362-B Christopher Avenue
Gaithersburg, MD 20879

Subject: Mechanical Mixer O&M Manual Comments

Dear Dereck,

This letter is to address the 6/6/12 comments concerning submittal 432254.01.004; please find our responses below:

1. PMSL acknowledges this comment; all responses are included here-in.
2. O&M format has been updated with the changes requested per the engineers comments.
3. Manual cover has been updated to included equipment name, location & specification section.
4. Binder spines have been added to the manuals to show the project title.
5. Title page has been added just inside the cover page to indicate the equipment manufacturer/supplier & contractor/installer with addresses and contact information.
6. O&M manual has been updated with consecutive page numbers, which are referenced on the table of contents.
7. All charts & tables throughout the manual which are were not specific to the equipment supplied on this project have now been highlighted or boxed in to show proper information.
8. The O&M manual references a procedure for equipment operation and start up, anything outside of these operational procedures is considered limiting and the factory should be consulted.
9. A parts ordering form & complete parts list are provided for each size gearbox provided on the project.
10. Equipment specification section has been added at the top of the outline installation drawings.
11. A troubleshooting section is provided in the manual. Anytime equipment is not working or operating under normal conditions, the equipment manufacturer should be consulted for further direction.
12. Proper installation procedures and operation procedures are outlined in the O&M manual. There are no special operational procedures for the equipment.
13. Maintenance Summary Forms have been completed and added to the O&M manual.

Respectfully Submitted
Reed O'Neal
Application Engineer

Equipment Manufacturer/Supplier Information

Philadelphia Mixing Solutions, Ltd.
1221 East Main Street
Palmyra, PA 17078

Ph: 717.832.2800
Fax: 717.832.1748
Website: www.philamixers.com

Contractor/Installer Information

CPP Construction
362 B Christopher Ave.
Gaithersburg, MD 20879

Ph: 301.355.7692
Fax: 301.355.7694
Website: www.cppconstruction.com

MAINTENANCE SUMMARY FORM

PROJECT: Package B - Pretreatment Facility CONTRACT NO.: _____

1. EQUIPMENT ITEM: CPT Reactor Mixers 1 & 2 - Daughter Reactor Mixer
2. MANUFACTURER: Philadelphia Mixing Solutions, Ltd.
3. EQUIPMENT/TAG NUMBER(S): M-69-1401, M-69-1402 & M-69-1403
4. SERIAL NUMBER(S): 11DEM0858, 11DEM0859 & 11DCM0860
5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): _____
6. OPERATING PARAMETERS/NAMEPLATE DATA (hp, voltage, speed, TDH, gpm, impeller size/type, copy of pump curve, seal type and size, etc.): CPT 1&2: 7.5 HP, Daughter 1.0 HP 3PH, 60Hz, 460V, 1800 RPM Input, 37 RPM Output, Hydrofoil Impeller
7. EQUIPMENT MSRP: N/A - Equipment is not a stock item.
8. DATE OF SERVICE: TBD
9. WARRANTY INFORMATION (time period and contact information): 12 Months after Substaintial Completion
10. LUBRICANT LIST (include environmentally friendly products, if applicable): See below
11. MANUFACTURER'S LOCAL REPRESENTATIVE: Combs & Associates
    a. Name Greg Everhart Telephone No. 804.559.4259
    b. Address 10191 Durhams Ferry Place, Mechanicsville, VA 23116-5185
12. ALTERNATIVE PARTS SUPPLIER (if applicable): Not Applicable
13. MAINTENANCE REQUIREMENTS:

Maintenance Operation Comments	**Frequency**	**Lubricant (If Applicable)**
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.
Inspect mixer drive for unusual sounds or oil leaks.	Daily	
Check oil level while mixer is off and add oil if needed.	Weekly	
Check operation of guards, gauges, controls & other safety devices.	Monthly	
Change oil in mixer drive, add grease to all mixer bearings, couplings & seals. Check tightness of all hardware. Refer to Motor O&M section for greasing.	Six Months or 2,500 Hours, whichever may occur first.	See Next Page
For periods of extended shutdown, review O&M Manual long term storage instructions.	Long Term Storage	

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ALEXANDRIA SANITATION AUTHORITY PACKAGE B

14. LUBRICANT LIST

Grease

The mixer drive is greased at the factory. The lubricants listed below are considered equivalent. For equivalents, contact your supplier.

Company	Mineral Base	Synthetic
Chevron	Ulti-Plex EP 2	Ulti-Plex Synthetic EP
Citgo	Lithoplex® MP #2	
Conoco	Omniguard™	
Mobil	Mobilith XHP 222	Mobilith SHC 220
Shell	Albida® EP 2	Albida® SLC 220

Industrial (Mineral-Base) Oils

The recommended type of lubricant is Extreme Pressure (EP) meeting ANSI/AGMA 9005. The lubricants listed below are considered acceptable.

Ambient Temp Range	15°F to 50°F (-9°C to 10°C)	25°F to 100°F (-4°C to 40°C)	50°F to 125°F (10°C to 52°C)
AGMA grade	**3 EP / 100**	**4 EP / 150**	**5 EP / 220**
Chevron	Meropa EP 100	Meropa EP 150	Meropa EP 220
Citgo	Citgo EP 100	Citgo EP 150	Citgo EP 220
Conoco	Hydroclear® 100	Hydroclear® EP 150	Hydroclear® EP 220
Mobil	Mobilgear 600XP 100	Mobilgear 600XP 150	Mobilgear 600XP 220
Shell	Omala® 100	Omala® 150	Omala® 220

Synthetic Oils

The synthetic lubricants listed below are considered equivalent. For other equivalents, contact your supplier.

Temp Range	-36°F to 100°F (-38°C to 40°C)	-31°F to 125°F (-35°C to 52°C)
AGMA grade	**4 EP / 150**	**5 EP/ 220**
Chevron	Tegra® 150	Tegra® 220
Citgo	Citgear® 150	Citgear® EP 220
Conoco	Syncon® EP 150	Syncon® EP 220
Mobil	Mobilgear SHC 150	Mobilgear SHC 220
Ultrachem	Omnigear 150 EP	Omnigear 220 EP

15. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY.

Part No.	Description	Unit	Quantity	Unit Cost
No spare parts are recommended for first 7-10 years of operation. After that point in time all drive bearings, shims, seals and gaskets are recommended.				

Note: Identify parts provided by this Contract with two asterisks.

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16. EQUIPMENT SUMMARY CHART FOR OWNER'S INVENTORY.

Equipment	Tag Number	Serial Number	MSRP

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General Run Test Form 3800/Lightnin/Chemineer

Assembly Check List

Date Performed	Type of Order	Test Result	# of Tests	Order Number	Job Number
7/19/12	Final Ship Test (test prior to ship) ☒	Pass ☒	1st ☒	56071	005607/-1-1
	Loaded Run Test ☐	Fail ☐	2+ ☐	PMSL Serial Number	
				11Demo858	

Size and Type	3855	Ensure OP Shaft is secure	N/A ☐
Motor Name	Siemens	All accessories mounted per OID	yes ☒ N/A ☐
Motor ID	3003826397-11	Loctite Motor Eyebolt ☒ N/A ☐	HS Key ☒ N/A ☒

	(Record Endplays)	N/A
Low Speed *(0 to 1) for Taper Roller Bearings.*	.000	☐
High Speed *(3 to 5) for Taper Roller Bearings.*	.004	☐
1st Intermediate *(2 to 4) for Taper Roller Bearings.*	.003	☐
2nd Intermediate *(0-1) for Taper Roller Bearings*	.001	☐

Backlash/Runout

	(Record Backlash)	N/A
Record total backlash (Bevel set only) (Refer to numbers on bevel sets)	.013	☐
Check "gap" between Couplings (1/16")	X	

Check/Record Run-Out of OP Shaft Face *(≤ .002)* Pilot *(≤ .005)*	Face .002	Pilot .003
Check/Record Run-Out of HS Cover	Face .001	Pilot
Check/Record Run-Out of Int. Cover	Face .003	Pilot .001
Check/Record Run-Out of Motor Pedestal	Face .005	Pilot .010

Document grease used for upper bearing cavity:	XHP222	N/A ☐	Check grease relief fittings on upper bearing cavity ☒
Document grease used for lower bearing cavity:		N/A ☐	
Assembly Person	Randy Owens		*Date* 7/19/12

Run Test Checklist

(Run for 10 minutes prior to taking measurements) Belt Test ☐ *Motor Test* ☒

Sufficient Grease Verified in Upper Bearing Cavity	Yes ☒	N/A ☐		
Sufficient Grease Verified in Lower Bearing Cavity	Yes ☒	N/A ☐		
Check/Record Input RPM	(Record data here) 1765	Pass ☒	Fail ☐	N/A ☐
Check/Record Output RPM *(within 10% of total) (RPMs <20.1 spec is 20%)*	38.1	☒	☐	☐
Check/Record Oil Pressure		☐	☐	☒
Listen for bumps or unusual sounds		☒	☐	☐
Run for 1 Minute in opposite direction (listen for bumps)		☒	☐	☐
Check/Record Sound level (85db max) (record ambient noise level here) 67	(Record data here) #1 73 #2 73 #3 73 #4 73	☒	☐	☐
Remove Belt and Check/Record End Play (if applicable) **See endplay limits above*		☐	☐	☒
Check/Record Vibration *(Vel .3in/sec Peak)*	#1 .01 #2 .01 #3 .02 #4 .02	☒	☐	☐
Check/Record AMPs	#1 3.9 #2 4.3 #3 4.0	☒	☐	☐
Check Gauges		☐	☐	☒
Visual inspect for leaks		☒	☐	☐

Document grease used here: XHP222	Check grease relief fittings in upper bearing cavity ☒	
Document oil used here: Eggard PL2		
Test Person Kevin Bender	*Date* 7/19/12	*Customer Initials*

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Order #: 003607/-1-1

FINAL INSPECTION CHECKLIST

Serial #: 11DEM0858

Date: 7/31/12

Assembly Final Inspection

	1st Pass	Reject	2nd Pass	N/A	Comments
1. **Dimensional Check Per O.I.D.** (Record measurements on O.I.D.)	☑	☐	☐	☐	
2. **Agit Fit Up Per O.I.D.** *(Shaft, Coupling Match Up, Hardware Installed in Hubs)*	☐	☐	☐	☑	
3. **Painted Per O.I.D.** *(Thickness and Quality)*	☑	☐	☐	☐	record thickness:-_____
4. **Manhole Correct** *(Bolt Pattern and Size)*	☐	☐	☐	☑	
5. **Motor Pedestal Drain Holes**	☑	☐	☐	☐	
6. **Completed Test Sheets**	☑	☑	☑	☐	NCR
7. **Rust Inhibitor Applied**	☑	☐	☐	☐	
8. **Motor Details**	☑	☐	☐	☐	
9. **Visible Defects**	☑	☐	☐	☐	
10. **Plastic Plugs Installed**	☑	☐	☐	☐	
11. **All Items Correct Per B.O.M.** *(Hardware and Accessories)*	☑	☐	☐	☐	
12. **Data Tag** *(Correct Data and Location)*	☑	☐	☐	☐	
13. **Warning Labels and Stickers** *(Correct and Straight)*	☑	☐	☐	☐	

Assembly Final Inspection

	1st Pass	Reject	2nd Pass	N/A	Comments
14. **Check Motor Coupling Gap**	☑	☐	☐	☐	
15. **Check Relief Fitting for Grease**	☑	☐	☐	☐	
16. **All Accessories Mounted** *(Per O.I.D.)*	☑	☐	☐	☐	
17. **Output Shaft Seal & Lockwire** *(Installed)*	☑	☐	☐	☐	
18. **Prop Drilled**	☐	☐	☐	☑	
19. **Proper Pictures Taken**	☑	☐	☐	☐	
20. **Warranty Bag** *Proper Breather* Alignment tag (scoop mount only)	☑	☐	☐	☐	
21. **Documentation/Manual**	☐	☐	☐	☑	

Shipping/Packaging Final Inspection

22. **Metal to Metal Contact** *(No Contact)*	☐	☐	☐	☐	
23. **Correct Skidding/Packaging** *(Domestic and International)*	☐	☐	☐	☐	
24. **Properly Anchored/Banded to Skids**	☐	☐	☐	☐	
25. **Strapping Location Stickers** *(Correct Placement)*	☐	☐	☐	☐	
26. **Shipping Information and Labeling** *(Correct per Vantage and OCN's)*	☐	☐	☐	☐	
25. **Proper Pictures Taken**	☐	☐	☐	☐	

Addditional Comments:

Final Inspector: C. HEIR
Name (Print)

Signature

General Run Test Form 3800/Lightnin/Chemineer

Assembly Check List

Date Performed	Type of Order	Test Result	# of Tests	Order Number	Job Number
7/19/12	Final Ship Test (test prior to ship) ☐	Pass ☑	1st ☑	56071	0056071-1-1
	Loaded Run Test ☐	Fail ☐	2+ ☐	PMSL Serial Number	
				11Demo859	

Size and Type	3855	Ensure OP Shaft is secure	N/A ☐
Motor Name	Siemens	All accessories mounted per OID	yes ☑ N/A ☐
Motor ID	3003826397-11	Loctite Motor Eyebolt ☑ N/A ☐	HS Key ☐ N/A ☐

	(Record Endplays)	N/A
Low Speed *(0 to 1) for Taper Roller Bearings.*	.001	☐
High Speed *(3 to 5) for Taper Roller Bearings.*	.004	☐
1st Intermediate *(2 to 4) for Taper Roller Bearings.*	.004	☐
2nd Intermediate *(0-1) for Taper Roller Bearings*	.001	☐

Backlash/Runout

	(Record Backlash)	N/A
Record total backlash (Bevel set only) (Refer to numbers on bevel sets)	.013	☐
Check "gap" between Couplings (1/16")	L	

Check/Record Run-Out of OP Shaft Face *(≤ .002)* Pilot *(≤ .005)*	Face .001	Pilot .002
Check/Record Run-Out of HS Cover	Face .001	Pilot
Check/Record Run-Out of Int. Cover	Face .002	Pilot .001
Check/Record Run-Out of Motor Pedestal	Face .003	Pilot .008

Document grease used for upper bearing cavity: XHP 222 N/A ☐	Check grease relief fittings on upper bearing cavity ☑
Document grease used for lower bearing cavity: XHP 222 N/A ☐	
Assembly Person Randy Daniels	*Date* 7/19/12

Run Test Checklist

(Run for 10 minutes prior to taking measurements) Belt Test ☐ *Motor Test* ☑

Sufficient Grease Verified in Upper Bearing Cavity	Yes ☑ N/A ☐			
Sufficient Grease Verified in Lower Bearing Cavity	Yes ☑ N/A ☐			
Check/Record Input RPM	(Record data here) 1765	Pass ☑	Fail ☐	N/A ☐
Check/Record Output RPM *(within 10% of total) (RPMs <20.1 spec is 20%)*	38.7	☑	☐	☐
Check/Record Oil Pressure		☐	☐	☑
Listen for bumps or unusual sounds		☑	☐	☐
Run for 1 Minute in opposite direction (listen for bumps)		☑	☐	☐
Check/Record Sound level (85db max) (record ambient noise level here) 67	(Record data here) #1 72 #2 72 #3 72 #4 72	☑	☐	☐
Remove Belt and Check/Record End Play (if applicable) **See endplay limits above*		☐	☐	☑
Check/Record Vibration *(Vel .3in/sec Peak)*	#1 .01 #2 .01 #3 .01 #4 .01	☑	☐	☐
Check/Record AMPs	#1 3.9 #2 4.3 #3 4.0	☑	☐	☐
Check Gauges		☐	☐	☑
Visual inspect for leaks		☑	☐	☐

Document grease used here: XHP222	Check grease relief fittings in upper bearing cavity ☑	
Document oil used here: ESgAnd PL2		
Test Person Kevin Beal	*Date* 7/19/12	*Customer Initials*

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Order #: 0056071-1-1

FINAL INSPECTION CHECKLIST

Serial #: 11DEM 0859

Date: 7/31/12

Assembly Final Inspection

	1st Pass	Reject	2nd Pass	N/A	Comments
1. **Dimensional Check Per O.I.D.** (Record measurements on O.I.D.)	✓				
2. **Agit Fit Up Per O.I.D.** *(Shaft, Coupling Match Up, Hardware Installed in Hubs)*				✓	
3. **Painted Per O.I.D.** *(Thickness and Quality)*	✓				record thickness:-_____
4. **Manhole Correct** *(Bolt Pattern and Size)*				✓	
5. **Motor Pedestal Drain Holes**	✓				
6. **Completed Test Sheets**	✓				
7. **Rust Inhibitor Applied**	✓				
8. **Motor Details**	✓				
9. **Visible Defects**	✓				
10. **Plastic Plugs Installed**					
11. **All Items Correct Per B.O.M.** *(Hardware and Accessories)*	✓				
12. **Data Tag** *(Correct Data and Location)*	✓				
13. **Warning Labels and Stickers** *(Correct and Straight)*	✓				

Assembly Final Inspection

	1st Pass	Reject	2nd Pass	N/A	Comments
14. Check Motor Coupling Gap	☑	☐	☐	☐	
15. Check Relief Fitting for Grease	☑	☐	☐	☐	
16. All Accessories Mounted *(Per O.I.D.)*	☐	☑	☑	☐	N/C/A
17. Output Shaft Seal & Lockwire *(Installed)*	☑	☐	☐	☐	
18. Prop Drilled	☐	☐	☐	☑	
19. Proper Pictures Taken	☑	☐	☐	☐	
20. Warranty Bag *Proper Breather* ~~Alignment tag (scoop mount only)~~	☑	☐	☐	☐	
21. Documentation/Manual	☐	☐	☐	☑	

Shipping/Packaging Final Inspection

22. Metal to Metal Contact *(No Contact)*	☐	☐	☐	☐	
23. Correct Skidding/Packaging *(Domestic and International)*	☐	☐	☐	☐	
24. Properly Anchored/Banded to Skids	☐	☐	☐	☐	
25. Strapping Location Stickers *(Correct Placement)*	☐	☐	☐	☐	
26. Shipping Information and Labeling *(Correct per Vantage and OCN's)*	☐	☐	☐	☐	
25. Proper Pictures Taken	☐	☐	☐	☐	

Addditional Comments:

Final Inspector: C. HEIM (Name (Print)) Charles A Heim (Signature)

General Run Test Form 3800/Lightnin/Chemineer

Assembly Check List

Date Performed	Type of Order	Test Result	# of Tests	Order Number	Job Number
7/27/12	Final Ship Test (test prior to ship) ☑	Pass ☑	1st ☑	56071	0056071-2-1
	Loaded Run Test ☐	Fail ☐	2+ ☐	PMSL Serial Number	
				11DCM0860	

Size and Type 3853M	Ensure OP Shaft is secure N/A ☐	
Motor Name Siemens	All accessories mounted per OID yes ☑ N/A ☐	
Motor ID CC032A	Loctite Motor Eyebolt ☒ N/A ☐	HS Key ☒ N/A ☐

	(Record Endplays)	N/A
Low Speed *(0 to 1) for Taper Roller Bearings.*	.001	☐
High Speed *(3 to 5) for Taper Roller Bearings.*	.005	☐
1st Intermediate *(2 to 4) for Taper Roller Bearings.*	.003	☐
2nd Intermediate *(0-1) for Taper Roller Bearings*	.001	☐

Backlash/Runout

	(Record Backlash)	
Record total backlash (Bevel set only) (Refer to numbers on bevel sets)	.011	N/A ☐
Check "gap" between Couplings (1/16")	1/16"	

Check/Record Run-Out of OP Shaft Face *(≤ .002)* Pilot *(≤ .005)*	Face .001	Pilot .003
Check/Record Run-Out of HS Cover	Face .002	Pilot .003
Check/Record Run-Out of Int. Cover	Face .0015	Pilot .002
Check/Record Run-Out of Motor Pedestal	Face .002	Pilot .008
Document grease used for upper bearing cavity: XHP222 N/A ☐	Check grease relief fittings on upper bearing cavity ☒	
Document grease used for lower bearing cavity: XHP222 N/A ☐		
Assembly Person [signature]	*Date* 7-27-12	

Run Test Checklist

(Run for 10 minutes prior to taking measurements) Belt Test ☐ *Motor Test* ☑

Sufficient Grease Verified in Upper Bearing Cavity	Yes ☑ N/A ☐			
Sufficient Grease Verified in Lower Bearing Cavity	Yes ☑ N/A ☐			
Check/Record Input RPM	1800 (Record data here)	Pass ☑	Fail ☐	N/A ☐
Check/Record Output RPM *(within 10% of total) (RPMs <20.1 spec is 20%)*	(37) 37	☑	☐	☐
Check/Record Oil Pressure		☐	☐	☑
Listen for bumps or unusual sounds		☑	☐	☐
Run for 1 Minute in opposite direction (listen for bumps)		☑	☐	☐
Check/Record Sound level (85db max) (record ambient noise level here) 68	(Record data here) #1 71 #2 72 #3 71 #4 72	☑	☐	☐
Remove Belt and Check/Record End Play (If applicable) **See endplay limits above*		☐	☐	☑
Check/Record Vibration *(Vel .3in/sec Peak)*	#1 .012 #2 .012 #3 .014 #4 .012	☑	☐	☐
Check/Record AMPs	#1 7 #2 9 #3 9	☑	☐	☐
Check Gauges		☐	☐	☑
Visual Inspect for leaks		☑	☐	☐

Document grease used here: XHP222	Check grease relief fittings in upper bearing cavity ☑	
Document oil used here: PG2		
Test Person [signature]	*Date* 7/28/12	*Customer Initials*

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Order #: 0056071-2-1

FINAL INSPECTION CHECKLIST

Serial #: 110CM0860

Date: 7/31/12

Assembly Final Inspection

	1st Pass	Reject	2nd Pass	N/A	Comments
1. **Dimensional Check Per O.I.D.** (Record measurements on O.I.D.)	☑	☐	☐	☐	
2. **Agit Fit Up Per O.I.D.** *(Shaft, Coupling Match Up, Hardware Installed in Hubs)*	☐	☐	☐	☑	
3. **Painted Per O.I.D.** *(Thickness and Quality)*	☑	☐	☐	☐	record thickness:-_____
4. **Manhole Correct** *(Bolt Pattern and Size)*	☐	☐	☐	☑	
5. **Motor Pedestal Drain Holes**	☑	☐	☐	☐	
6. **Completed Test Sheets**	☑	☐	☐	☐	
7. **Rust Inhibitor Applied**	☑	☐	☐	☐	
8. **Motor Details**	☑	☐	☐	☐	
9. **Visible Defects**	☑	☐	☐	☐	
10. **Plastic Plugs Installed**	☑	☐	☐	☐	
11. **All Items Correct Per B.O.M.** *(Hardware and Accessories)*	☑	☐	☐	☐	
12. **Data Tag** *(Correct Data and Location)*	☑	☐	☐	☐	
13. **Warning Labels and Stickers** *(Correct and Straight)*	☑	☐	☐	☐	

Assembly Final Inspection

	1st Pass	Reject	2nd Pass	N/A	Comments
14. **Check Motor Coupling Gap**	☑	☐	☐	☐	
15. **Check Relief Fitting for Grease**	☑	☐	☐	☐	
16. **All Accessories Mounted** *(Per O.I.D.)*	☑	☐	☐	☐	
17. **Output Shaft Seal & Lockwire** *(Installed)*	☑	☐	☐	☐	
18. **Prop Drilled**	☐	☐	☐	☑	
19. **Proper Pictures Taken**	☑	☐	☐	☐	
20. **Warranty Bag** *Proper Breather* ~~Alignment tag (scoop mount only)~~	☑	☐	☐	☐	
21. **Documentation/Manual**	☐	☐	☐	☑	

Shipping/Packaging Final Inspection

22. **Metal to Metal Contact** *(No Contact)*	☐	☐	☐	☐	
23. **Correct Skidding/Packaging** *(Domestic and International)*	☐	☐	☐	☐	
24. **Properly Anchored/Banded to Skids**	☐	☐	☐	☐	
25. **Strapping Location Stickers** *(Correct Placement)*	☐	☐	☐	☐	
26. **Shipping Information and Labeling** *(Correct per Vantage and OCN's)*	☐	☐	☐	☐	
25. **Proper Pictures Taken**	☐	☐	☐	☐	

Addditional Comments:

Final Inspector: C. Hee Lee

Name (Print)

Signature

M69-1401

INSTALLATION CERTIFICATION

CUSTOMER INFORMATION

NAME:	ADDRESS:
CPP Construction, Co., Inc.	1500 Eisenhower Ave. Alexandria, VA 22314

CONTACT:	PHONE:	FAX/EMAIL:
Chris Doss	301-355-7692	

DRIVE INFORMATION

MIXER SIZE/TYPE:	SERIAL NUMBER:	PMSL ORDER NUMBER:	SHIP DATE:
3855M PTOS	11DEM0858	56071	7-31-2012

GEAR OIL TYPE:	GEAR OIL MANUFACTURER:	GREASE TYPE:	GREASE MANUFACTURER:
600XP 150	Mobilgear	XHP 222	Mobilgear

PRESENT DURING INSTALLATION

ENGINEER:	OWNER:	CONTRACTOR:
		CPP Construction Co.
PMSL SALES REPRESENTATIVE:	PMSL SERVICE REPRESENTATIVE:	DATE:
	Kenneth Diem	8-1-2013

INSTALLATION CHECKS

JOB SAFETY MUST BE FULLY INTEGRATED INTO ALL WORK. PLEASE READ AND BECOME FAMILIAR WITH ALL SAFETY AND CAUTION STATEMENTS OUTLINED IN THE IOM MANUAL BEFORE ANY WORK IS TO BE PERFORMED.

	Ok	See Note	N/A
1. Disconnect, lock-out, and tag-out the equipment	☒	☐	☐
2. Has the equipment been stored correctly?	☒	☐	☐
3. Is the equipment mounted properly per the OID?	☒	☐	☐
4. Is the equipment properly anchored?	☒	☐	☐
5. Check paint (note any peeling/chipping)	☒	☐	☐
6. Check for external rust & corrosion	☒	☐	☐
7. Check impeller elevation per the OID	☒	☐	☐
8. Confirm blades are mounted on correct side of hub	☒	☐	☐
9. Check bolt torques of impeller blades per OID	☒	☐	☐
10. Check set screw torque on impeller hub per OID	☒	☐	☐
11. Check torque of rigid coupling bolts per OID	☒	☐	☐
12. Remove high speed coupling guard, if applicable	☒	☐	☐
13. Rotate high speed coupling, check for binding	☒	☐	☐
14. Check alignment of high speed flexible coupling	☐	☐	☒
15. Repack high speed flexible coupling, if applicable	☐	☐	☒
16. Inspect drive for proper oil level	☒	☐	☐
17. Add correct type of oil if necessary	☐	☐	☒
18. Inspect oil level in upper dam, if applicable	☐	☐	☒
19. Regrease output shaft and motor bearings	☒	☐	☐
20. Replace all inspection covers and coupling guards	☒	☐	☐
21. Recheck torque of all external mixer fasteners	☒	☐	☐
22. Check installation of breather/desiccant breather	☒	☐	☐
23. Verify proper installation of motor support, if applicable	☐	☐	☒
24. Verify proper rotation	☒	☐	☐
25. Unlock motor control center	☑	☐	☐
26. Pre-Startup Checklist provided	☑	☐	☐
QUILL UNITS ONLY			
27. Remove low speed coupling inspection covers	☐	☐	☐
28. Check grease in grid of low speed flexible coupling	☐	☐	☐
29. Replace all inspection covers and coupling guards	☐	☐	☐

ITEMS REQUIRING CUSTOMER ATTENTION

1.) No load Amps A > 4.4 B > 4.4 C > 4.5
2.) A to G > 275 B to G > 275 C to G > 275 Rotation and
3.) A to B > 475 A to C > 474 B to C > 476 NO LOAD OR

8.1.13

The results of the inspection are understood, and I agree to complete any and all work shown in the lists of items requiring attention:

CUSTOMER REPRESENTATIVE — DATE: 8/1/13 — CUSTOMER TITLE: Project Manager

Based upon my inspection, upon past and future compliance with the IOM Manual, and upon the customer's agreement to successfully complete all work shown in the "Items Requiring Customer Attention" section, I find that the referenced unit is properly installed.

Kenneth Diem — PMSL REPRESENTATIVE

8-1-2013 — DATE

PMSL Family of Companies

M69-1402

INSTALLATION CERTIFICATION

CUSTOMER INFORMATION

NAME:	ADDRESS:
CPP Construction, Co., Inc.	1500 Eisenhower Ave. Alexandria, VA 22314

CONTACT:	PHONE:	FAX/EMAIL:
Chris Doss	301-355-7692	

DRIVE INFORMATION

MIXER SIZE/TYPE:	SERIAL NUMBER:	PMSL ORDER NUMBER:	SHIP DATE:
3855M PTOS	11DEM0859	56071	7-31-2012

GEAR OIL TYPE:	GEAR OIL MANUFACTURER:	GREASE TYPE:	GREASE MANUFACTURER:
600 XP 150	Mobilgear	XHP 222	Mobilgear

PRESENT DURING INSTALLATION

ENGINEER:	OWNER:	CONTRACTOR:
		CPP Construction Co.
PMSL SALES REPRESENTATIVE:	**PMSL SERVICE REPRESENTATIVE:**	**DATE:**
	Kenneth Diem	8-1-2013

INSTALLATION CHECKS

JOB SAFETY MUST BE FULLY INTEGRATED INTO ALL WORK. PLEASE READ AND BECOME FAMILIAR WITH ALL SAFETY AND CAUTION STATEMENTS OUTLINED IN THE IOM MANUAL BEFORE ANY WORK IS TO BE PERFORMED.

	Ok	See Note	N/A
1. Disconnect, lock-out, and tag-out the equipment	☒	☐	☐
2. Has the equipment been stored correctly?	☒	☐	☐
3. Is the equipment mounted properly per the OID?	☒	☐	☐
4. Is the equipment properly anchored?	☒	☐	☐
5. Check paint (note any peeling/chipping)	☒	☐	☐
6. Check for external rust & corrosion	☒	☐	☐
7. Check impeller elevation per the OID	☒	☐	☐
8. Confirm blades are mounted on correct side of hub	☒	☐	☐
9. Check bolt torques of impeller blades per OID	☒	☐	☐
10. Check set screw torque on impeller hub per OID	☒	☐	☐
11. Check torque of rigid coupling bolts per OID	☒	☐	☐
12. Remove high speed coupling guard, if applicable	☒	☐	☐
13. Rotate high speed coupling, check for binding	☒	☐	☐
14. Check alignment of high speed flexible coupling	☐	☐	☒
15. Repack high speed flexible coupling, if applicable	☐	☐	☒
16. Inspect drive for proper oil level	☒	☐	☐
17. Add correct type of oil if necessary	☐	☐	☒
18. Inspect oil level in upper dam, if applicable	☐	☐	☒
19. Regrease output shaft and motor bearings	☒	☐	☐
20. Replace all inspection covers and coupling guards	☒	☐	☐
21. Recheck torque of all external mixer fasteners	☒	☐	☐
22. Check installation of breather/desiccant breather	☒	☐	☐
23. Verify proper installation of motor support, if applicable	☐	☐	☒
24. Verify proper rotation	☒	☐	☐
25. Unlock motor control center	☒	☐	☐
26. Pre-Startup Checklist provided	☒	☐	☐
QUILL UNITS ONLY			
27. Remove low speed coupling inspection covers	☐	☐	☐
28. Check grease in grid of low speed flexible coupling	☐	☐	☐
29. Replace all inspection covers and coupling guards	☐	☐	☐

ITEMS REQUIRING CUSTOMER ATTENTION

1.) No load AMPS A > 4.4 B > 4.4 C > 4.5 Rotation @ no load KD 8.1.13

2.) A to G > 275 B to G > 275 C to G > 275

3.) A to B > 474 A to C > 474 B to C > 475

The results of the inspection are understood, and I agree to complete any and all work shown in the lists of items requiring attention:

CUSTOMER REPRESENTATIVE — DATE: 8/1/13 — CUSTOMER TITLE: Project Manager

Based upon my inspection, upon past and future compliance with the IOM Manual, and upon the customer's agreement to successfully complete all work shown in the "Items Requiring Customer Attention" section, I find that the referenced unit is properly installed.

Kenneth Diem — PMSL REPRESENTATIVE

8-1-2013 — DATE

INSTALLATION CERTIFICATION

M69-1403

CUSTOMER INFORMATION

NAME:	ADDRESS:
CPP Construction, Co., Inc.	1500 Eisenhower Ave. Alexandria, VA 22314

CONTACT:	PHONE:	FAX/EMAIL:
Chris Doss	301-355-7692	

DRIVE INFORMATION

MIXER SIZE/TYPE:	SERIAL NUMBER:	PMSL ORDER NUMBER:	SHIP DATE:
3853M PTOS	11DCM0860	56071	7-31-2012

GEAR OIL TYPE:	GEAR OIL MANUFACTURER:	GREASE TYPE:	GREASE MANUFACTURER:
600XP 150	Mobilgear	XHP 222	Mobilgear

PRESENT DURING INSTALLATION

ENGINEER:	OWNER:	CONTRACTOR:
		CPP Construction Co.
PMSL SALES REPRESENTATIVE:	**PMSL SERVICE REPRESENTATIVE:**	**DATE:**
	Kenneth Diem	8-1-2013

INSTALLATION CHECKS

JOB SAFETY MUST BE FULLY INTEGRATED INTO ALL WORK. PLEASE READ AND BECOME FAMILIAR WITH ALL SAFETY AND CAUTION STATEMENTS OUTLINED IN THE IOM MANUAL BEFORE ANY WORK IS TO BE PERFORMED.

	Ok	See Note	N/A
1. Disconnect, lock-out, and tag-out the equipment	☒	☐	☐
2. Has the equipment been stored correctly?	☒	☐	☐
3. Is the equipment mounted properly per the OID?	☒	☐	☐
4. Is the equipment properly anchored?	☒	☐	☐
5. Check paint (note any peeling/chipping)	☒	☐	☐
6. Check for external rust & corrosion	☒	☐	☐
7. Check impeller elevation per the OID	☒	☐	☐
8. Confirm blades are mounted on correct side of hub	☒	☐	☐
9. Check bolt torques of impeller blades per OID	☒	☐	☐
10. Check set screw torque on impeller hub per OID	☒	☐	☐
11. Check torque of rigid coupling bolts per OID	☒	☐	☐
12. Remove high speed coupling guard, if applicable	☒	☐	☐
13. Rotate high speed coupling, check for binding	☒	☐	☐
14. Check alignment of high speed flexible coupling	☐	☐	☒
15. Repack high speed flexible coupling, if applicable	☐	☐	☒

	Ok	See Note	N/A
16. Inspect drive for proper oil level	☒	☐	☐
17. Add correct type of oil if necessary	☐	☐	☒
18. Inspect oil level in upper dam, if applicable	☐	☐	☒
19. Regrease output shaft and motor bearings	☒	☐	☐
20. Replace all inspection covers and coupling guards	☒	☐	☐
21. Recheck torque of all external mixer fasteners	☒	☐	☐
22. Check installation of breather/desiccant breather	☒	☐	☐
23. Verify proper installation of motor support, if applicable	☐	☐	☒
24. Verify proper rotation	☒	☐	☐
25. Unlock motor control center	☒	☐	☐
26. Pre-Startup Checklist provided	☒	☐	☐
QUILL UNITS ONLY			
27. Remove low speed coupling inspection covers	☐	☐	☐
28. Check grease in grid of low speed flexible coupling	☐	☐	☐
29. Replace all inspection covers and coupling guards	☐	☐	☐

ITEMS REQUIRING CUSTOMER ATTENTION

1.) No load Amps A > 1.0 B > .9 C > .9 Rotation & NO LOAD DR 8.1.13

2.) A to G > 275 B to G > 275 C to G > 275

3.) A to B > 474 A to C > 473 B to C > 475

The results of the inspection are understood, and I agree to complete any and all work shown in the lists of items requiring attention:

CUSTOMER REPRESENTATIVE — DATE: 8/1/13 — CUSTOMER TITLE: Project Manager

Based upon my inspection, upon past and future compliance with the IOM Manual, and upon the customer's agreement to successfully complete all work shown in the "Items Requiring Customer Attention" section, I find that the referenced unit is properly installed.

Kenneth Diem — PMSL REPRESENTATIVE

8-1-2013 — DATE

House of Balance

Vibration Analysis · Precision Dynamic Balancing
"Your Plant or Ours"

November 5, 2013

CPP Construction
362B Christopher Ave.
Gaithersburg, MD 20879

Attn: Chris Doss
Subject: Vibration Report

Dear Mr. Doss,

Thank you for allowing the House of Balance the opportunity to perform vibration analysis on the three mixer assemblies located within the Alexandria WWTP.

A nationally certified technician using a C.S.I. 2130 data Analyzer gathered vibration analysis data. This analyzer provides the ability to create and maintain comprehensive Predictive Maintenance database specific to any industrial application. This database contains all information necessary to collect, store, and analyze condition monitoring data for different machines at one or more plant locations.

These mixers will be analyzed in accordance with the specification provided, not to exceed .28 inches/sec, overall, pk.

Below are the overall vibration readings collected on each mixer:

MIXER #1		
Measurement Point	**Overall Vibration**	**Pass/Fail**
Motor Outboard Horizontal	.077 In/Sec	Pass
Motor Outboard Vertical	.024 In/Sec	Pass
Motor Axial	.044 In/Sec	Pass
Motor Inboard Horizontal	.031 In/Sec	Pass
Motor Inboard Vertical	.017 In/Sec	Pass
Mixer Input Horizontal	.073 In/Sec	Pass
Mixer Input Vertical	.014 In/Sec	Pass
Mixer Input Axial	.010 In/Sec	Pass
Mixer Output Horizontal	.023 In/Sec	Pass
Mixer Output Vertical	.019 In/Sec	Pass

6340 Howard Lane, Baltimore, MD 21075 · (410) 379-8330 · Fax (410) 796-0029

MIXER #2		
Measurement Point	**Overall Vibration**	**Pass/Fail**
Motor Outboard Horizontal	.109 In/Sec	Pass
Motor Outboard Vertical	.028 In/Sec	Pass
Motor Axial	.026 In/Sec	Pass
Motor Inboard Horizontal	.044 In/Sec	Pass
Motor Inboard Vertical	.022 In/Sec	Pass
Mixer Input Horizontal	.118 In/Sec	Pass
Mixer Input Vertical	.015 In/Sec	Pass
Mixer Input Axial	.012 In/Sec	Pass
Mixer Output Horizontal	.024 In/Sec	Pass
Mixer Output Vertical	.031 In/Sec	Pass

MIXER #3		
Measurement Point	**Overall Vibration**	**Pass/Fail**
Motor Outboard Horizontal	.021 In/Sec	Pass
Motor Outboard Vertical	.015 In/Sec	Pass
Motor Axial	.014 In/Sec	Pass
Motor Inboard Horizontal	.012 In/Sec	Pass
Motor Inboard Vertical	.009 In/Sec	Pass
Mixer Input Horizontal	.010 In/Sec	Pass
Mixer Input Vertical	.006 In/Sec	Pass
Mixer Input Axial	.004 In/Sec	Pass
Mixer Output Horizontal	.008 In/Sec	Pass
Mixer Output Vertical	.006 In/Sec	Pass

As the above vibration data demonstrates, each mixer is operating well within the specified tolerance, not to exceed .28 inches/second.

Thank you for considering House of Balance for your service needs. If we can provide any additional information, or if we can be of service in any way, please do not hesitate to contact us.

Yours Truly,
House of Balance

Charles Magez
Vibration Analyst

6340 Howard Lane, Baltimore, MD 21227 · (410) 379-8330 · Fax (410) 796-0029

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER Alexandria Sanitation Authority EQPT SERIAL NO: 11DCM0860

EQPT TAG NO: M69-1403 EQPT/SYSTEM: _____

PROJECT NO: _____ SPEC. SECTION: _____

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

- [x] Installed in accordance with Manufacturer's recommendations.
- [x] Inspected, checked, and adjusted.
- [x] Serviced with proper initial lubricants.
- [x] Electrical and mechanical connections meet quality and safety standards.
- [x] All applicable safety equipment has been properly installed.
- [x] Functional tests.
- [ ] System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments: _____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: August 1, 2013

Manufacturer: Philadelphia Mixing Solutions Ltd.

By Manufacturer's Authorized Representative: Kenneth Diem
(Authorized Signature)

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MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER Alexandria Sanitation Authority EQPT SERIAL NO: 11DEM0859

EQPT TAG NO: MG9-1402 EQPT/SYSTEM: _____

PROJECT NO: _____ SPEC. SECTION: _____

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

- [x] Installed in accordance with Manufacturer's recommendations.
- [x] Inspected, checked, and adjusted.
- [x] Serviced with proper initial lubricants.
- [x] Electrical and mechanical connections meet quality and safety standards.
- [x] All applicable safety equipment has been properly installed.
- [x] Functional tests.
- [ ] System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments: _____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: August 1, 2013

Manufacturer: Philadelphia Mixing Solutions Ltd.

By Manufacturer's Authorized Representative: Kenneth Diem
(Authorized Signature)

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MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER Alexandria Sanitation Authority EQPT SERIAL NO: 11DEM0858

EQPT TAG NO: M69-1401 EQPT/SYSTEM: _____

PROJECT NO: _____ SPEC. SECTION: _____

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

- ☑ Installed in accordance with Manufacturer's recommendations.
- ☑ Inspected, checked, and adjusted.
- ☑ Serviced with proper initial lubricants.
- ☑ Electrical and mechanical connections meet quality and safety standards.
- ☑ All applicable safety equipment has been properly installed.
- ☑ Functional tests.
- ☐ System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments: _____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: August 1, 2013

Manufacturer: Philadelphia Mixing Solutions Ltd.

By Manufacturer's Authorized Representative: Kenneth Diem
(Authorized Signature)

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MANUFACTURER'S CERTIFICATE OF COMPLIANCE

OWNER: Alexandria Sanitation Authority

PROJECT NAME: SANUP Package B

PROJECT NO: 10-12

PRODUCT, MATERIAL, OR SERVICE SUBMITTED:

Comments: Mixers 69-1401, 1402, 1403

I hereby certify that the above-referenced product, material, or service called for by the contract for the named project will be furnished in accordance with all applicable requirements. I further certify that the product, material, or service are of the quality specified and conform in all respects with the contract requirements, and are in the quantity shown.

Date of Execution: August 1, 2013

Manufacturer: Philadelphia Mixing Solutions Ltd.

Manufacturer's Authorized Representative *(print)*: Kenneth Diem

Kenneth Diem

(Authorized Signature)

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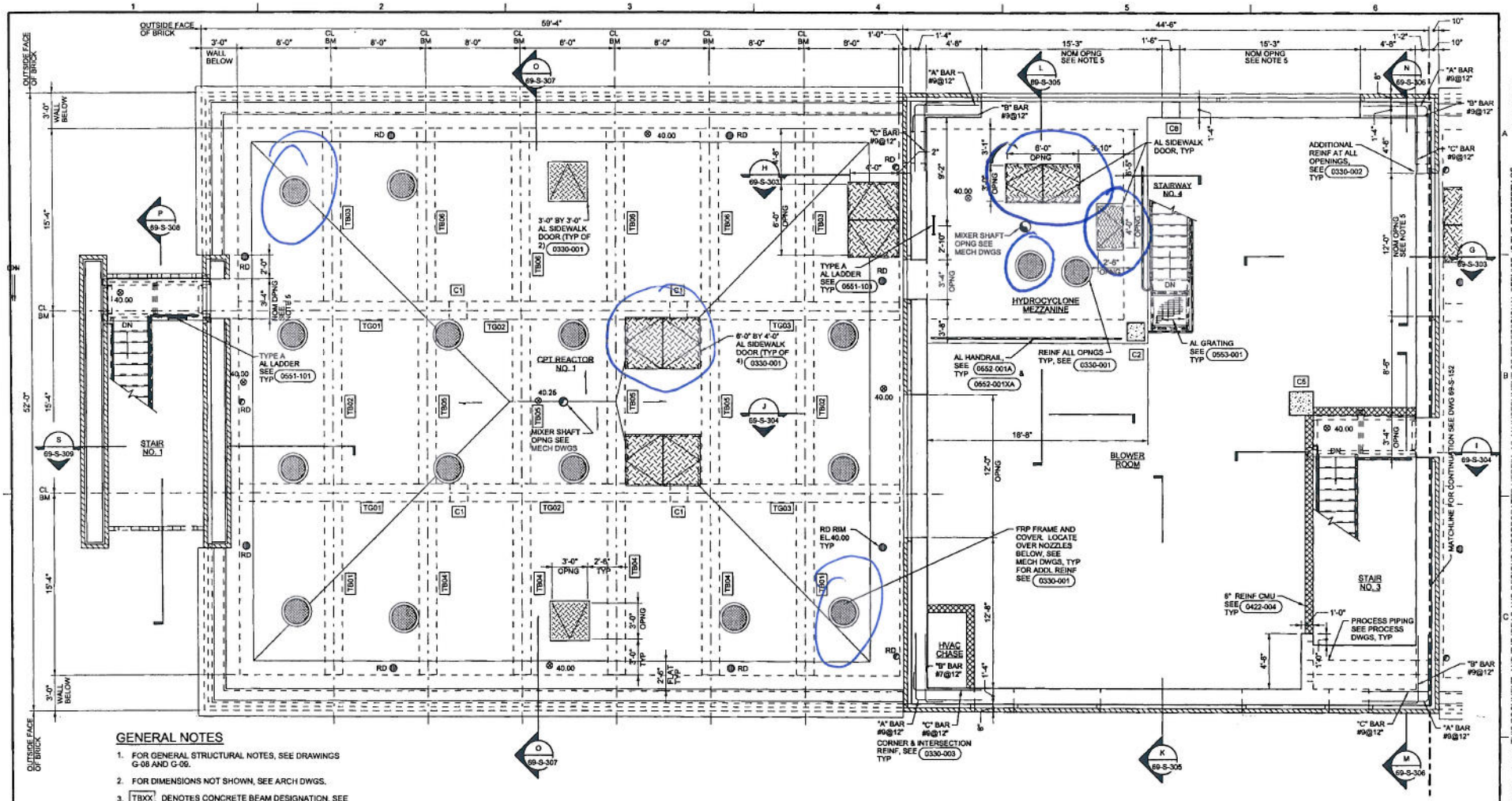
sample locations points
12/19/13
CH2MHill



GENERAL NOTES

1. FOR GENERAL STRUCTURAL NOTES, SEE DRAWINGS G-08 AND G-09.
2. FOR DIMENSIONS NOT SHOWN, SEE ARCH DWGS.
3. TBXX DENOTES CONCRETE BEAM DESIGNATION, SEE BEAM SCHEDULE.
4. CXX DENOTES CONCRETE COLUMN DESIGNATION, SEE COLUMN SCHEDULE.
5. ALL CONC WALL OPNGS THAT REQUIRE DOORS, WINDOWS, LOUVERS, ETC SHALL BE DIMENSIONED 1/4" LARGER AT THE JAMB AND HEAD TO ACCOMODATE THE ASSEMBLIES. THE WIDTH SHALL BE A TOTAL OF 1/2" LARGER AND 1/4" HIGHER THEN NOMINAL DIMENSION SHOWN.

PLAN AT EL 40.00
1/4"=1'-0"

KEY PLAN
NTS

COMMONWEALTH OF VIRGINIA
FRANK L. GRAY
Lic. No. 023070
1/19/11
PROFESSIONAL ENGINEER

DSGN	F. GRAY					VERIFY SCALE
DR	F. GRAY					BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	M. CHRZANOWSKI					
APVD	M. OSBORNE	NO.	DATE	REVISION	BY	APVD

CH2MHILL

ALEXANDRIA SANITATION AUTHORITY
STATE-OF-THE-ART
NITROGEN UPGRADE PROGRAM (SANUP)
ALEXANDRIA, VIRGINIA
PACKAGE B

STRUCTURAL
CENTRATE PRE-TREATMENT COMPLEX - 69
PARTIAL PLAN AT EL 40.00

SHEET	115
DWG	69-S-151
DATE	JAN 2011
PROJ	387423

FILENAME: dn69s151_387423.dgn PLOT DATE: 1/18/2011 PLOT TIME: 7:34:33 AM

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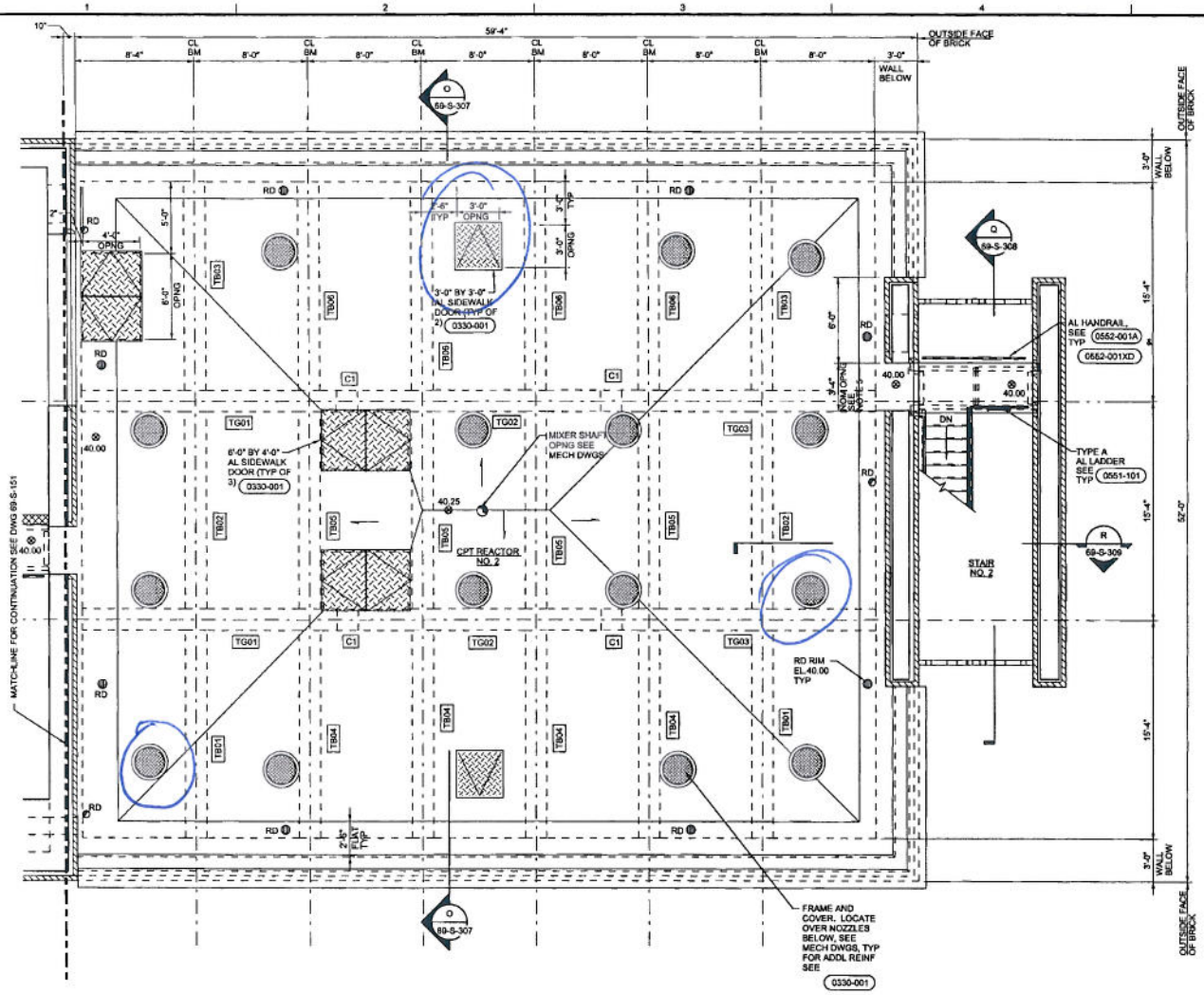
Sample location points
12/19/13
CH2M Hill



PLAN AT EL 40.00
1/4"=1'-0"

KEY PLAN
NTS

GENERAL NOTES

1. FOR GENERAL STRUCTURAL NOTES, SEE DRAWINGS G-08 AND G-09.
2. FOR DIMENSIONS NOT SHOWN, SEE ARCH DWGS.
3. TBXX DENOTES CONCRETE BEAM DESIGNATION, SEE BEAM SCHEDULE.
4. CXX DENOTES CONCRETE COLUMN DESIGNATION, SEE COLUMN SCHEDULE.
5. ALL CONC WALL OPNGS THAT REQUIRE DOORS, WINDOWS, LOUVERS, ETC SHALL BE DIMENSIONED 1/4" LARGER AT THE JAMB AND HEAD TO ACCOMODATE THE ASSEMBLIES. THE WIDTH SHALL BE A TOTAL OF 1/2" LARGER AND1/4" HIGHER THEN NOMINAL DIMENSION SHOWN.

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COMMONWEALTH OF VIRGINIA
FRANK L. GRAY
Lic. No. 0402070
PROFESSIONAL ENGINEER
1/19/11

DSGN	F. GRAY
DR	F. GRAY
CHK	M. CHRZANOWSKI
APVD	M. OSBORNE

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

ALEXANDRIA SANITATION AUTHORITY
STATE-OF-THE-ART NITROGEN UPGRADE PROGRAM (SANUP)
ALEXANDRIA, VIRGINIA
PACKAGE B

STRUCTURAL
CENTRATE PRE-TREATMENT COMPLEX - 69
PARTIAL PLAN AT EL 40.00

SHEET	116
DWG	69-S-152
DATE	JAN 2011
PROJ	387423

FILENAME: dn69s152_387423.dgn PLOT DATE: 1/18/2011 PLOT TIME: 7:34:36 AM

AlexRenew

Prepared by:

Jacobs