

PROJECT MANUAL
FOR:

**ELEVATED HYDROPILLAR
REPAINTING and REPAIRS**

City of Mineral Point
Iowa County, Wisconsin

OWNER: CITY OF MINERAL POINT



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**ELEVATED HYDROPILLAR
REPAINTING and REPAIRS**

City of Mineral Point
Iowa County, Wisconsin

OWNER: CITY OF MINERAL POINT

DATE: January 3, 2020
PROJECT NUMBER: D19-002
PREPARED BY: MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
875 SOUTH CHESTNUT STREET
PLATTEVILLE, WI 53818



Bart Nies
1/03/20

RELEASED FOR BIDDING



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Advertisement for Bids
Elevated Hydropillar Repainting and Repairs
City of Mineral Point
Iowa County, Wisconsin

Bid Opening: Thursday, January 23, 2020 at 3:00 p.m., C.S.T.

The City of Mineral Point will receive sealed bids at the City Hall/Community Room located at 137 High Street, Suite 1, Mineral Point, WI 53565 for the Elevated Hydropillar Repainting and Repairs Project until **Thursday, January 23, 2020 at 3:00 p.m., C.S.T.**, at which time all bids will be publicly opened and read aloud.

Description of Work:

The Project consists of completing the necessary repairs and modifications to the existing elevated steel water storage tank, sandblasting and repainting the interior and exterior of the elevated steel hydropillar water storage tank, and pressure washing of the COR-TEN steel column. Bids will be received for a single prime Contract. Bids shall be on a lump sum and unit price basis, with additive alternate bid items as indicated in the Bid Form.

Bidding Documents:

The Issuing Office for the Bidding Documents is: **Delta 3 Engineering, 875 S. Chestnut Street, Platteville, WI 53818, (608) 348-5355, mail@delta3eng.biz**. Bidding Documents will be made available to Prospective Bidders by Monday, January 6, 2020. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 8:00 a.m. and 4:30 p.m. CST. Printed Bidding Documents may be obtained from the Issuing Office during the hours indicated above for a **non-refundable** deposit of **\$45.00**, including shipping, upon Issuing Office's receipt of payment for the Bidding Documents. Digital version of the Bidding Documents also may be obtained online at **QuestCDN.com using ebid doc #6633240** upon receipt of a **non-refundable** deposit of **\$25.00**. Bidding Documents may also be examined at the office of the City of Mineral Point, 137 High Street, Suite 1, Mineral Point, WI 53565, on Mondays through Fridays between the hours of 9:00 a.m. and 3:00 p.m. CST. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Consideration of Bids:

No proposal will be accepted unless accompanied by a certified check or bid bond equal to at least five percent (5%) of the amount bid, payable to the OWNER as a guarantee that, if the bid is accepted, the Bidder will execute and file the proper contract and bond within 15 days after the award of the contract. The certified check or bid bond will be returned to the Bidder as soon as the contract is signed. If after 15 days the Bidder shall fail to do so, the certified check or bid bond shall be forfeited to the OWNER as liquidated damages.

Bids may not be withdrawn within 90 days after the date of the bid opening. The OWNER reserves the right to increase or decrease the quantity of any item or portion of the work, or to omit portions of the work, as may be deemed necessary by the OWNER, and the same shall in no way affect or make void the contract, except that additions to, or deductions from, the contract price will be appropriately made. The OWNER reserves the right to waive any informalities, or to reject any or all bids, or any part of a bid, and to award the Contract to the Bidder, who in the judgment of the OWNER, will best serve the interest of the OWNER.

A pre-bid conference will not be conducted, and bidders will not be prequalified. Site visits can be arranged by contacting **Delta 3 Engineering at (608) 348-5355**.

Additional Conditions:

The letting of the work described herein is subject to the provisions of Sections 62.15, 66.0901, and 66.0903(1m) of the Wisconsin Statutes. There are no prevailing wage rates for this Project.

The City of Mineral Point encourages Minority-owned Business Enterprises (MBE's), Women's Business Enterprises (WBE's), Disadvantaged Business Enterprises (DBE's), and Small Businesses in Rural Areas (SBRA's) to submit bids. A municipality, in awarding prime contracts, and primary contractor, in awarding subcontractors, are required to make a good faith effort to achieve a combined minimum goal of participation for MBE/WBE utilization in accordance with s.NR 162.09(3), Wis. Admin. Code. If a subcontractor awards subcontracts, these requirements shall apply to the subcontractor.

Published by the authority of the City Council.

By: City of Mineral Point
Ms. Candice Coughlin
City Clerk - Treasurer
137 High Street, Suite 1
Mineral Point, WI 53565
Date: Thursday, January 9, 2020

++ END OF ADVERTISEMENT FOR BIDS ++

00200 – INSTRUCTIONS TO BIDDERS

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* – The office, as identified in the Invitation for Bids, from which the Bidding Documents are to be issued and where the bidding procedures are to be administered. The issuing office is of the Engineer, whose contact information is:
- Delta 3 Engineering, Inc.
875 South Chestnut Street
Platteville, WI 53818
(608) 348-5355

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number, and format, and for the nonrefundable deposit stated in the advertisement or invitation to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five (5) days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:
- A. Evidence of Bidder's authority to do business in the state where the Project is located.
- B. Bidder's state or other contractor license number, if applicable.
- C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."
- D. Other required information regarding qualifications.
- 3.01 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.02 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.03 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

**ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE;
OWNER’S SAFETY PROGRAM; OTHER WORK AT THE SITE**

4.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
1. The Supplementary Conditions identify:
 - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
 - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others. The Owner and Engineer do not assume responsibility for the completeness or accuracy of the information and data provided for such Underground Facilities.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all, if applicable: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the

Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

- E. consider 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 Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

- 6.01 A pre-Bid conference will not be held for this Project. Site visits can be arranged by contacting **Delta 3 Engineering, 875 S. Chestnut Street, Platteville, WI 53818, (608) 348-5355.**

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than three (3) days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five [5%] percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates)

and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions. Certified checks shall be drawn on the account of the Bidder.

- 8.02 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 Documents, furnished the required contract security, 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 deliver the Contract Documents and furnish the required contract security 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. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 8.03 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 seven (7) days after the Effective Date of the Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 10 days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 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 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

- 11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least five (5) days prior to the date for receipt of Bids. Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.
- 11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03 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, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be typed or completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- B. 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.”
- 13.02 A Bid by a corporation shall 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 shall be shown. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 13.03 A Bid by a partnership shall 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 partnership’s address for receiving notices shall be shown.
- 13.04 A Bid by a limited liability company shall 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 firm’s address for receiving notices shall be shown.
- 13.05 A Bid by an individual shall show the Bidder’s name and address for receiving notices.
- 13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture’s address for receiving notices shall be shown.
- 13.07 All names shall be typed or printed in ink below the signatures.
- 13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

- 13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Lump Sum*

- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

14.02 *Base Bid with Alternates*

- A. Bidders shall submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.
- B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.

14.03 *Sectional Bids*

- A. Bidders may submit a Bid on any individual section or any combination of sections, as set forth in the Bid Form.
- B. Submission of a Bid on any section signifies Bidder's willingness to enter into a Contract for that section alone at the price offered.
- C. If Bidder submits Bids on individual sections and a Bid based on a combination of those sections, such combined Bid need not be the sum of the Bids on the individual sections.
- D. Bidders offering a Bid on one or more sections shall be capable of completing the Work covered by those sections within the time period stated in the Agreement.

14.04 *Unit Price*

- A. Bidders shall 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 Price" (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 Prices"; 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.

14.05 *Allowances*

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if

any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to City Administrator - City of Mineral Point; 137 High Street, Suite 1; Mineral Point, WI 53565.
- 15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and 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.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after a contract has been executed by the Owner.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.01 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 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Owner or the Project to make an award to that Bidder. 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, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.04 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not 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.
 - B. For determination of the apparent low Bidder(s) when sectional bids are submitted, Bids will be compared on the basis of the aggregate of the Bids for separate sections and the Bids for combined sections that result in the lowest total amount for all of the Work.
 - C. 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.
- 19.05 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.
- 19.06 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 20 – BONDS AND INSURANCE

- 20.01 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 and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall 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 shall 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 shall 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.

ARTICLE 22 – SALES AND USE TAXES

- 22.01 Owner is exempt from Wisconsin state sales and use taxes on materials and equipment to be incorporated in the Work as per 2015 Wisconsin Act 126 and Wisconsin State Statute 77.54 (9m): “The sales price from the sale of and the storage, use, or other consumption of tangible personal property, or items or property under s. 77.52 (1) (b) or (c), sold to a construction contractor who, in fulfillment of a real property construction activity, transfers the tangible personal property, or items or property under s. 77.52 (1) (b) or (c), to an entity described under sub. (9a) (b), (c), (d), (em), or (f), if such tangible personal property, or items or property, becomes a component of a facility in this state that is owned by the entity. In this subsection, “facility” means any building, shelter, parking lot, parking garage, athletic field, athletic park, storm sewer, water supply system, or sewerage and waste water treatment facility, but does not include a highway, street or road.” Refer to Paragraph SC-6.10 of the Supplementary Conditions for additional information.

00410 – BID FORM

PROJECT IDENTIFICATION: Elevated Hydropillar Repainting and Repairs

CONTRACTS: Contract #1 – Water Tank Repainting and Repairs

BID DEADLINE: Thursday, January 23, 2020 at 3:00 p.m., C.S.T.

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

**City of Mineral Point
137 High Street
Suite 1
Mineral Point, WI 53565**

1.02 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.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for **90** days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.

Addendum Date

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to



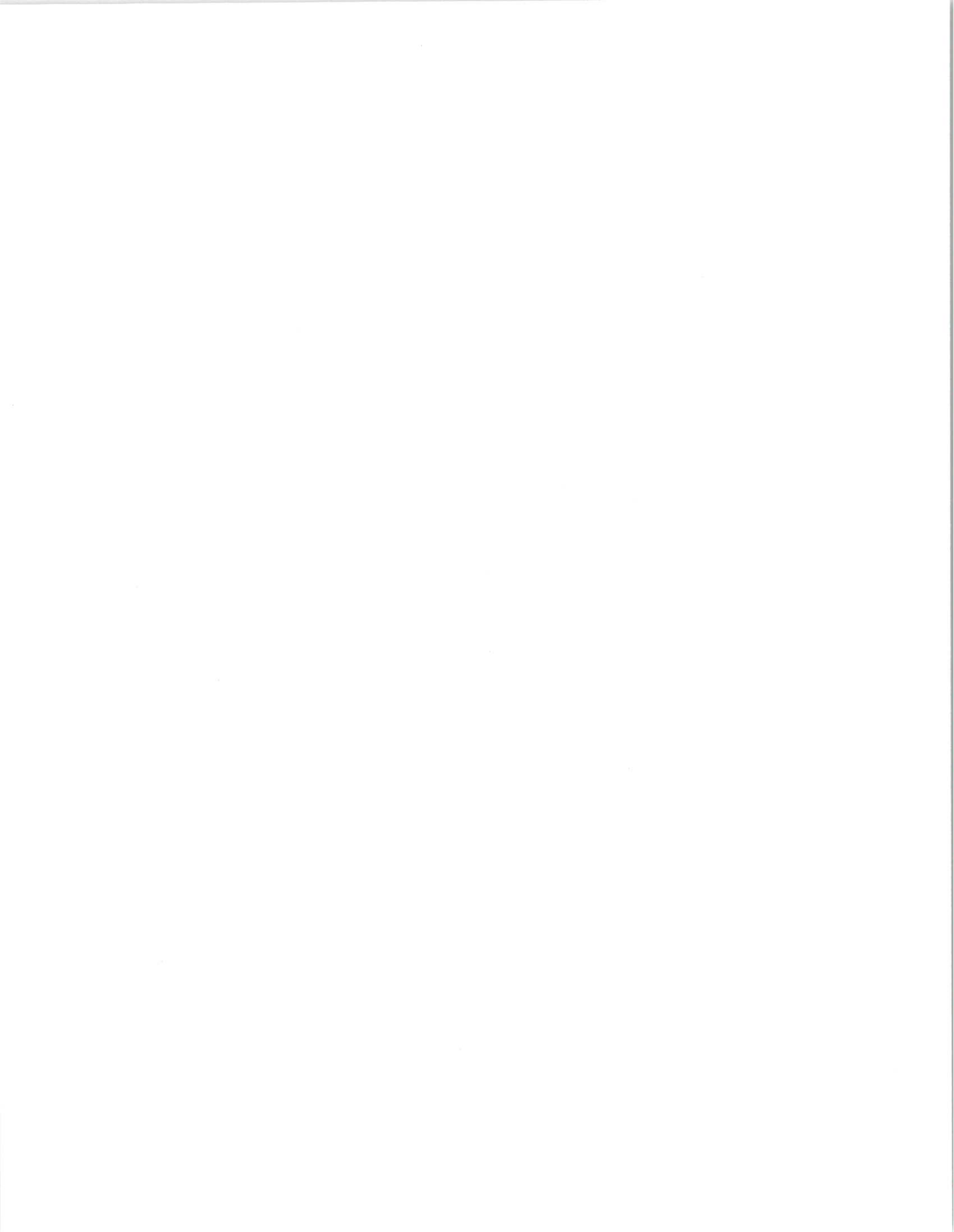
existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. 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 any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. 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.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. 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;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 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;

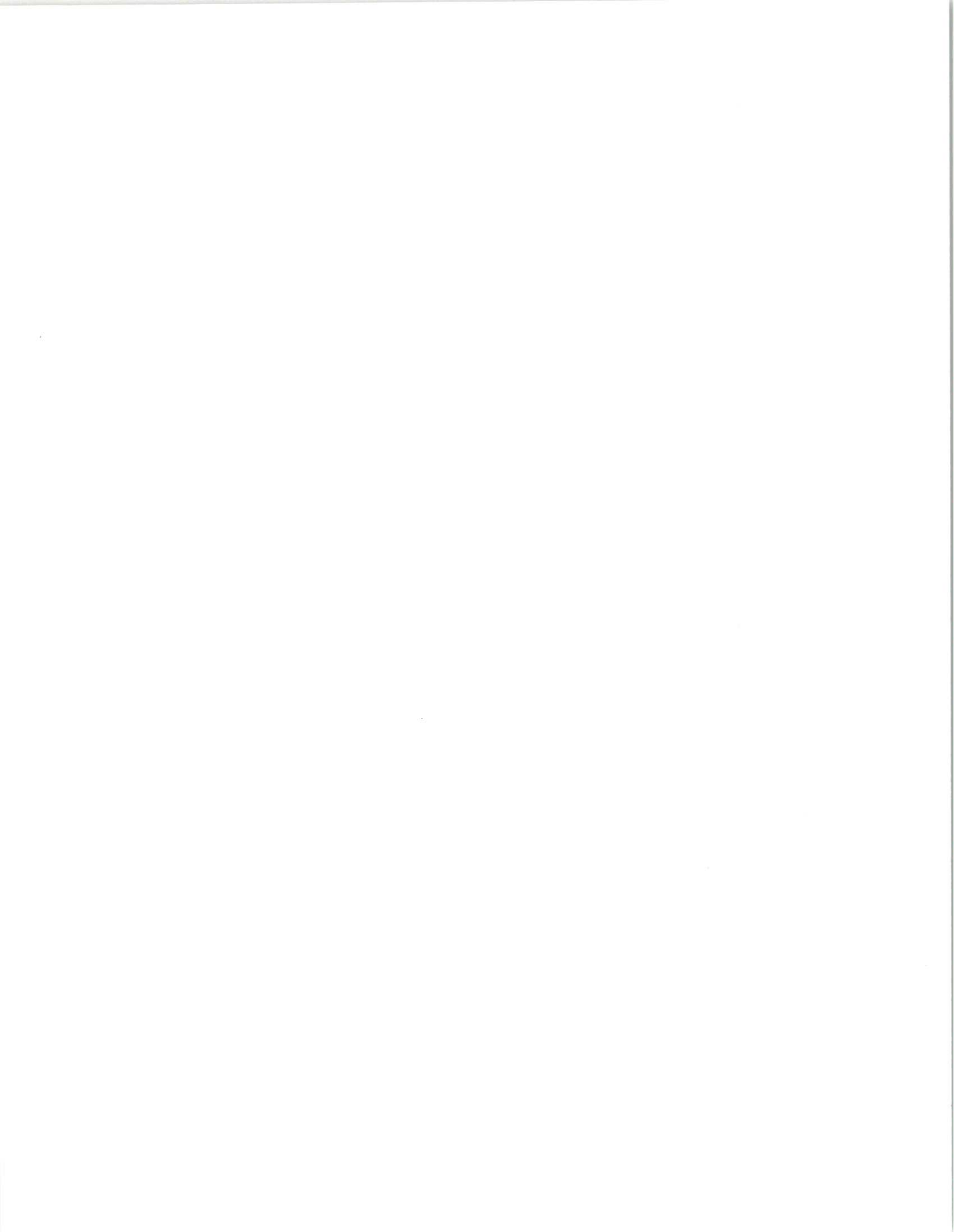
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.
- E. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.
- 4.02 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Bid Schedule

Contract #1 – Water Tank Repainting and Repairs

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Subtotal Price
1-1	Mobilization, Bonds, and Insurance as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-2	Temporary Portable Pressure Water Storage completed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-3	Structure Modifications completed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-4	Interior Wet Area Abrasive Blast and Coating completed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-5	Interior Dry Area Spot Repair and Coating completed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-6	Exterior Area Abrasive Blast and Coating completed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-7	COR-TEN Column Pressure Washing completed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____
1-8	Water Tank Lettering completed as specified and indicated.	3	Each	\$ _____ / Each	= \$ _____

CONTRACT #1 – TOTAL = \$ _____



Alternate 'A' – Circulation Pump

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Subtotal Price
A-1	Circulation Pump installed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____

ALTERNATE 'A' – TOTAL = \$ _____

Alternate 'B' – Cathodic Protection

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Subtotal Price
B-1	Cathodic Protection System installed as specified and indicated.	1	L.S.	LUMP SUM	= \$ _____

ALTERNATE 'B' – TOTAL = \$ _____



Bidder acknowledges that: (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

BID SCHEDULE SUMMARY:

CONTRACT #1 –

WATER TANK REPAINTING AND REPAIRS TOTAL = \$ _____

ALTERNATE 'A' – CIRCULATION PUMP TOTAL = \$ _____

ALTERNATE 'B' – CATHODIC PROTECTION TOTAL = \$ _____

ARTICLE 5 – TIME OF COMPLETION

- 5.01 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.
- 5.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 6 – ATTACHMENTS TO THIS BID

- 6.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security;
 - B. List of Project References;
 - C. List of Proposed Subcontractors;
 - D. List of Proposed Suppliers;
 - E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids; and
 - F. Contractor's License No.: _____ or Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

ARTICLE 7 – DEFINED TERMS

- 7.01 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 8 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

ARTICLE 9 – SWORN STATEMENT

I, being duly sworn, hereby certify that I have examined and carefully prepared this Bid from the Contract Documents and have checked such Contract Documents in detail before submitting this Bid; that all statements made herein are made on behalf of the above Bidder; that I have full authority to make such statements; that I have full authority to submit this Bid on behalf of the above Bidder; and that said statements are true and correct.

Signature

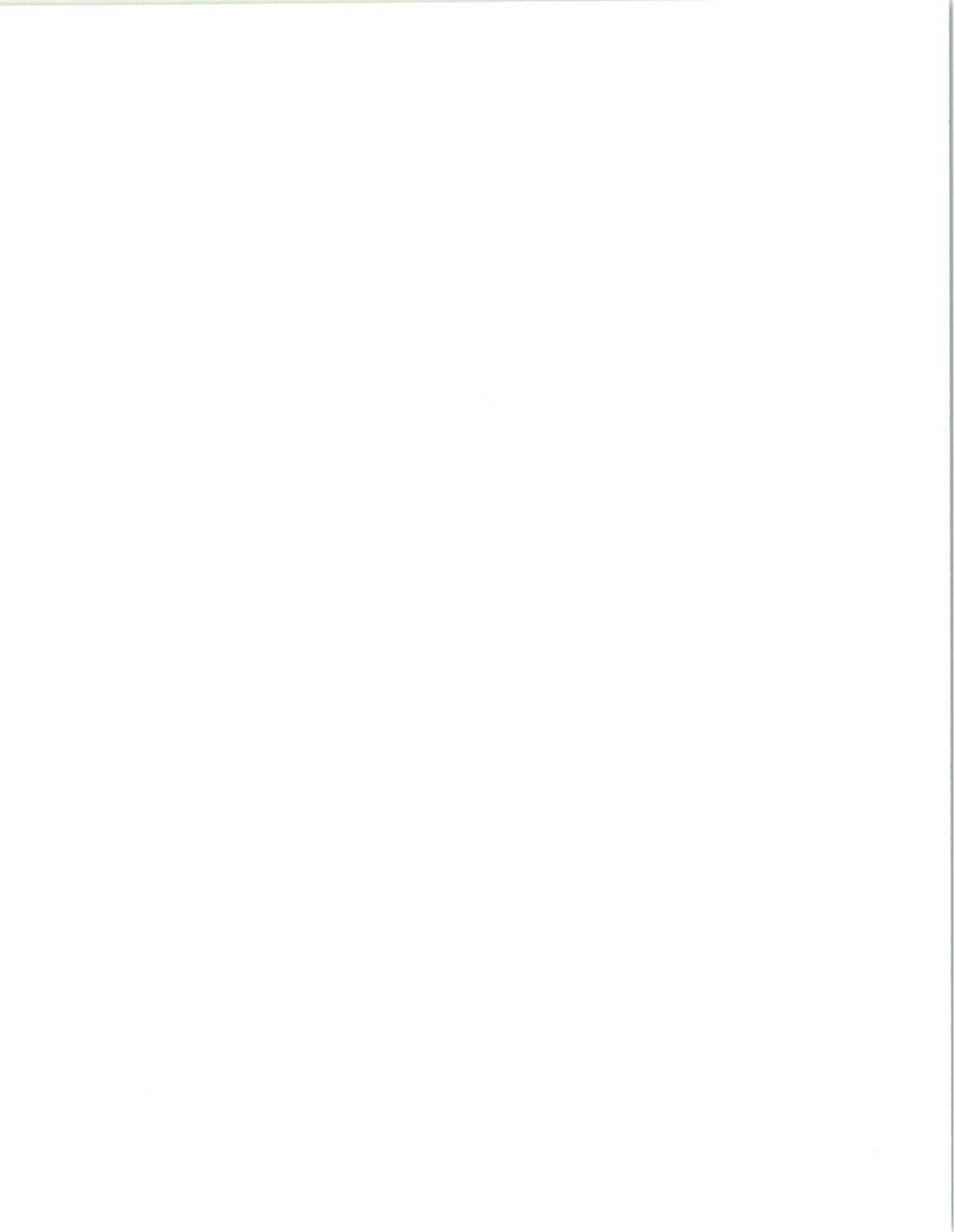
Name and Title

Subscribed and sworn to before me this ____ day
of _____, 20____.

_____ Notary Public

_____ County, _____

My Commission expires _____



LIST OF REFERENCES

The Bidder is required to provide a list of three (3) projects and corresponding references for those projects which have been completed by the Bidder in the recent past and are similar to this Project in scope of Work and cost.

1) Name/Owner of Project: _____

Description of Project: _____

Project Cost: _____

Contact Reference: _____

Telephone No.: _____

2) Name/Owner of Project: _____

Description of Project: _____

Project Cost: _____

Contact Reference: _____

Telephone No.: _____

3) Name/Owner of Project: _____

Description of Project: _____

Project Cost: _____

Contact Reference: _____

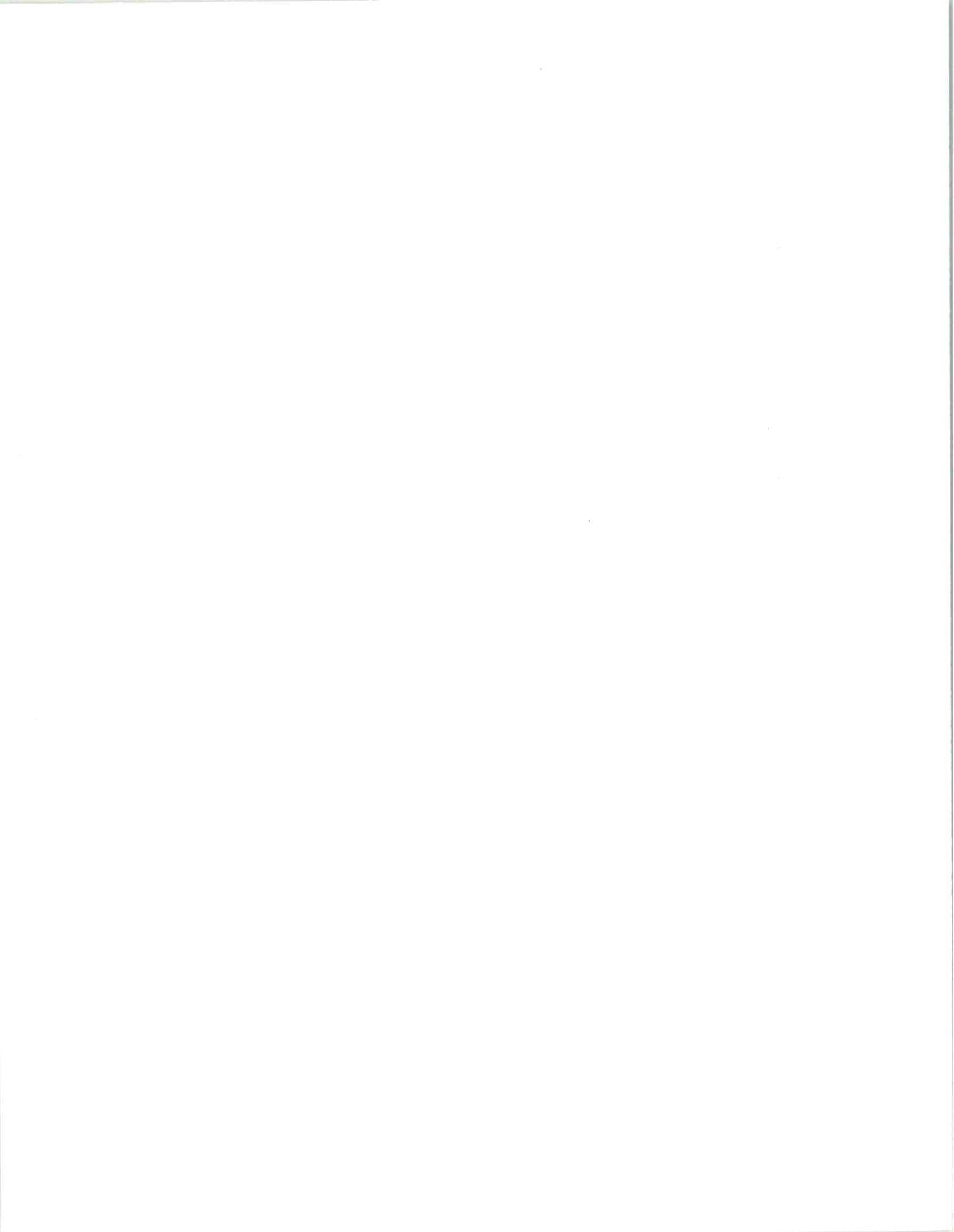
Telephone No.: _____



LIST OF SUBCONTRACTORS

The following is a complete list of all Subcontractors, in which the Bidder expects to employ, and the category of Work to be performed by each on the Project, if the Bidder is awarded a Contract. This list of Subcontractors shall not be changed without the prior written approval of the Owner. If no Subcontractors are intended to be utilized, please state "None."

<u>SUBCONTRACTOR/SUPPLIER</u>	<u>CATEGORY OF WORK</u>
1) _____	_____
2) _____	_____
3) _____	_____
4) _____	_____
5) _____	_____
6) _____	_____
7) _____	_____
8) _____	_____
9) _____	_____
10) _____	_____



00430 - BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description (*Project Name— Include Location*):

BOND

Bond Number:

Date:

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By:

Signature

Print Name

Title

By:

Signature (Attach Power of Attorney)

Print Name

Title

Attest:

Signature

Title

Attest:

Signature

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

00510 - NOTICE OF AWARD

Date of Issuance:

Owner: City of Mineral Point Owner's Contract No.: 1
Engineer: Delta 3 Engineering, Inc. Engineer's Project No.: D19-002
Project: Elevated Hydropillar Repainting and Repairs Contract Name: Contract #1 – Water Tank Repainting and Repairs

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated by _____, 20____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Contract #1 – Water Tank Repainting and Repairs

The Contract Price of the awarded Contract is: _____ Dollars (\$_____) subject to unit prices.

Three (3) unexecuted counterparts of the Agreement accompany this Notice of Award, and one (1) copy of the Contract Documents accompanies this Notice of Award.

One (1) set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award, or by _____, 20____:

1. Deliver to Owner three (3) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) three (3) sets of the Contract security and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):
 - Deliver to the Owner an acknowledged copy of this Notice of Award.

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: City of Mineral Point

By: _____ Authorized Signature
By: _____ Authorized Signature
Title: _____ Mayor Title: _____ City Clerk-Treasurer

RECEIPT of the NOTICE OF THE AWARD is hereby acknowledged:

Contractor:

Authorized Signature

By: _____

Title: _____

Date: _____

Copy: Engineer

00520 - AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between _____ City of Mineral Point _____ (“Owner”) and
_____ (“Contractor”).

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:

Contract #1 – Water Tank Repainting and Repairs

ARTICLE 2 – THE PROJECT

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

Elevated Hydropillar Repainting and Repairs

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by **Delta 3 Engineering, Inc.**

3.02 The Owner has retained **Delta 3 Engineering, Inc.** (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time 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: Dates*

A. The Work, including Alternate ‘1-A’ and ‘1-B’, if awarded, will be substantially completed on or before **August 1, 2020**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **August 8, 2020**. The Work shall be continuous and uninterrupted.

4.03 *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 times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration 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 **\$1,000** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A 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 **\$250** for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

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. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

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 Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment once each month 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 Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

- b. 95 percent of cost of materials and equipment not incorporated in the Work, but delivered, suitably stored, and accompanied by documentation satisfactory to the Owner (with the balance being retainage).
- B. Upon Substantial Completion, Owner may pay an amount sufficient to increase total payments to Contractor to 98 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200% 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 in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

- 7.01 All amounts not paid when due as provided in Article 15 of the General Conditions shall bear interest at the rate of 12 percent per annum unless one or more of the exceptions under Wis. Stat. sec. 66.0135(4) applies.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents, including any Addenda.
 - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, furnishings, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, furnishings, and performance of the Work.
 - D. Contractor has carefully studied all, if applicable: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
 - E. 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 Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, furnishings, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

- F. 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.
- G. 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.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. 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.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 00520-1 to 00520-6, inclusive).
 - 2. Performance bond (pages 00610-1 to 00610-3, inclusive).
 - 3. Payment bond (pages 00615-1 to 00615-3, inclusive).
 - 4. General Conditions (pages 00700-1 to 00700-65, inclusive).
 - 5. Supplementary Conditions (pages 00800-1 to 00800-11, inclusive).
 - 6. Wage Rates and Labor Standards (pages 00850-1 to 00850-1, inclusive).
 - 7. Technical Specifications as listed in the Table of Contents of the Project Manual.
 - 8. Drawings (not attached but incorporated by reference) consisting of 0 sheets with each sheet bearing the following general title: None
 - 9. Addenda (numbers ___ to ___, inclusive).
 - 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 1 to ___, inclusive).
 - 11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.

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

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto 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 Documents.

10.03 *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.

10.04 *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.

10.05 *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 10.05:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 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; and

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.

10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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

This Agreement will be effective on _____, 20____ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

City of Mineral Point _____

By: _____

Jason Basting

Title: _____

Mayor

By: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Candice Coughlin

Title: _____

City Clerk - Treasurer

Attest: _____

Title: _____

Address for giving notices:

City of Mineral Point _____

137 High Street; Suite 1 _____

Mineral Point, WI 53565 _____

Address for giving notices:

License No.: _____

(where applicable)

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

00550 - NOTICE TO PROCEED

Owner:	City of Mineral Point	Owner's Contract No.:	1
Contractor:		Contractor's Project No.:	
Engineer:	Delta 3 Engineering, Inc.	Engineer's Project No.:	D19-002
Project:	Elevated Hydropillar Repainting and Repairs	Contract Name:	Contract #1 – Water Tank Repainting and Repairs
		Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 20___. [see Paragraph 4.01 of the General Conditions]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the date of Substantial Completion is **August 1, 2020**, and the date of Readiness for Final Payment is **August 8, 2020**.

Before starting any Work at the Site, Contractor must comply with the following:

- Attend the Preconstruction Conference
- Provide construction material submittals to the Engineer for approval

Owner: City of Mineral Point

Authorized Signature

By: Jason Basting

Title: Mayor

Date Issued:

RECEIPT of the above NOTICE TO PROCEED is hereby acknowledged:

Contractor:

Authorized Signature

By:

Title:

Date:

Copy: Engineer





PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: None See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal *(seal)*

Surety's Name and Corporate Seal *(seal)*

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

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 shall be considered plural where applicable.

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, which is incorporated herein by reference.

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 shall 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 shall 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 shall 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 shall 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 shall 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 Owners 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, 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 shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall 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 shall not be reduced or set off on account of any such unrelated obligations. No right of action shall 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 may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall 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 shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 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.

14.2 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.

14.3 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.

14.4 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.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

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

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: None See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

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 shall be considered plural where applicable.

1. 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.
2. 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.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall 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.
4. 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.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, 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
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 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).
6. 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.
7. 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:
 - 7.1 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
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall 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.
8. The Surety's total obligation shall 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 shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall 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 satisfy 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.
10. 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.
11. 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.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state 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 shall be applicable.
 13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
 14. 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
 15. 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.
16. **Definitions**
- 16.1 **Claim:** A written statement by the Claimant including at a minimum:
 1. The name of the Claimant;
 2. The name of the person for whom the labor was done, or materials or equipment furnished;
 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;
 4. A brief description of the labor, materials, or equipment furnished;
 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;
 6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 7. The total amount of previous payments received by the Claimant; and
 - 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 shall be 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.
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
 17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
 18. Modifications to this Bond are as follows:





00625 - CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	City of Mineral Point	Owner's Contract No.:	1
Contractor:		Contractor's Project No.:	
Engineer:	Delta 3 Engineering, Inc.	Engineer's Project No.:	D19-002
Project:	Elevated Hydropillar Repainting and Repairs	Contract Name:	Contract #1 – Water Tank Repainting and Repairs

This [preliminary] [final] Certificate of Substantial Completion applies to:

- All Work The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities: None As follows

Amendments to Contractor's responsibilities: None As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:

RECEIVED:

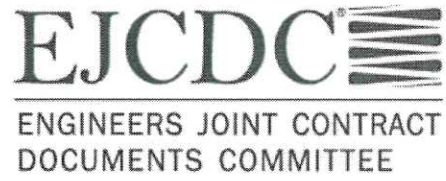
RECEIVED:

By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____



**00700 - STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared by



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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.
1. *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.
 2. *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.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *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.
 8. *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.
 9. *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 both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *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.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *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. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *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.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *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.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *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.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *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.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *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.
36. *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.

37. *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 furnished by Owner which are designated for the use of Contractor.
38. *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.
39. *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.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, 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 thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, 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.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *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.

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

See Supplementary Conditions

1.02 *Terminology*

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, 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 Engineer 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 10 or any other provision of the Contract Documents.
- C. *Day:*
1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean 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, shall mean 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, shall mean 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. 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 Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates 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 the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed 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 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. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule 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 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, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules 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 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer 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 to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

- B. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items 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 items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

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, shall mean 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, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, 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, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 Engineer 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 Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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 Engineer 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 Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer 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 Engineer shall 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 and Owner shall submit to the Engineer 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. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

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 editions, 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 Engineer 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 shall preclude 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 thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, 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. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier. **See Supplementary 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 shall 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 in Engineer's judgment 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 Engineer 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. **See Supplementary Conditions**

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall 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, Engineer, 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 an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the 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 an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall 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. abnormal weather conditions; **See Supplementary Conditions**
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. 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 governed by Article 5.
- E. Paragraph 8.03 governs 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.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times 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.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor 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; 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 7.12, 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 at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them 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 Owner, Engineer, or any other party indemnified hereunder 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 shall conform to applicable Laws and Regulations.
- 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.
- 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* **See Supplementary Conditions**

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); 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 upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their 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; or
 - 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.

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 either:
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; or
 2. is of such a nature as to require a change in the Drawings or Specifications; or
 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 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 and Engineer 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. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining 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 above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, 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 conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
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; or
 - 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 as 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, or both, then any such adjustment shall 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, or both, 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.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly 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), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; 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 advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, 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. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - 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;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. 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, or both, then any such adjustment shall 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, or both, 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* See Supplementary Conditions

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. 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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their 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; or
 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. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them 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 a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them 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 the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. 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.

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 all of Contractor's obligations under the Contract. These bonds shall 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 Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, 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 shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

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 state or jurisdiction in which the Project is located, 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. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. 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, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of 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.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect 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 shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *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:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall 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.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 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); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 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.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims 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 shall be written on an occurrence basis.
- E. *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. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) 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 Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

See Supplementary Conditions

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance* *See Supplementary Conditions*

- A. *Builder's Risk:* Unless otherwise 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 full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
 - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice 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 each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- 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 (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* 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 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. 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 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 Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as 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. None of the above waivers shall extend 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. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the 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, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

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. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall 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, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. 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 shall 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 legal holidays only with Owner's written consent, which will not be unreasonably withheld.

See Supplementary Conditions

7.03 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 shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, 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 shall 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.

7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, 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 Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it 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;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it 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. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be

evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall 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 that specified, and
 - 3) be suited to the same use as that 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 that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall 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. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer'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. Engineer 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:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer 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 Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. **See Supplementary Conditions**
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity 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 five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. 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, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, 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, Supplier, or other individual or entity, whether initially or as a replacement, shall 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 Engineer 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 fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer 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.

See Supplementary Conditions

7.07 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 a particular 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 or Engineer, 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 shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them 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.

7.08 Permits

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. 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

7.09 *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.

See Supplementary Conditions

7.10 *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. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall 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 Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them 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 shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give 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 notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *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 Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *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.

- 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.
- B. 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. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when 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.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.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 Engineer 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).
- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall 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.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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.

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 threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified 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
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- 2. Each submittal shall 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 submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

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

- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.
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 Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in 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. Engineer'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. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall 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 Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall 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.D.4.
- E. *Resubmittal Procedures:*
1. Contractor shall make corrections required by Engineer 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 Engineer on previous submittals.
 2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
 3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper 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.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer 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 Engineer;
 7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.
- D. 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 shall 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 Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them 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 the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury 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 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.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 shall 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.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations,

specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

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.
- 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 utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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 Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer 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.

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, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible 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, or both. 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 shall 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. When applicable, any such equitable adjustment in Contract Price shall 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 is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- 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. 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 to 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.
- C. 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 to Contractor.

- D. 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, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them 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 Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall 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 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *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.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer 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.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

See Supplementary Conditions

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

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

- A. Engineer 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. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any

Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer 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. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer 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.
- D. Engineer'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 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.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* 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 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer 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 Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes 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 shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate 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.

11.03 *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.

11.04 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall 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); or
 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 11.04.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 11.04.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit shall 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 shall be 15 percent; **See Supplementary Conditions**
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five 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 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 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 five 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 shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work; **See Supplementary Conditions**
 - d. no fee shall 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 will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall 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. Engineer will advise Owner regarding the Change Proposal and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the 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 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work

involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *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:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract 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 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, 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:* The party receiving a Claim 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 shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that 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 shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results:* If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, 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 shall be incorporated in a Change Order 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. 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 shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the

Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, 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, shall 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall 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, who will then determine, with the advice of Engineer, 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 shall 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 for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, 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.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work. **See Supplementary Conditions**
 - 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 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 property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence 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 shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall 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 shall not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, 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. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 4. Costs due to the negligence 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.
 - 5. 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:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
- E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

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 and Engineer.
- 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 on account of any of the foregoing will be valid.

Contingency Allowance: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

- C. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall 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. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if: **See Supplementary Conditions**
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a

decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will 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 therewith as applicable.

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer 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 shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer 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 and Engineer'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 shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, 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 Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer 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. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- 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 authorities 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 (such costs to be approved by Engineer as to reasonableness), 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 shall 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. Engineer has the authority 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 Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer 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, or both, 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 shall 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 Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven 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, Owner's other contractors, and Engineer and Engineer's consultants 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 Engineer. Progress payments on account of 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. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and 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.
 - 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 - 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement. **See Supplementary Conditions**
- C. *Review of Applications:*
 - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 - 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's

observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- 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 appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
- a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner 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. Engineer 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. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor. **See Supplementary Conditions**

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of 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 that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated 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;

- I. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) 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 shall 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 shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

See Supplementary Conditions

15.02 *Contractor's Warranty of Title*

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 seven 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 and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor. **See Supplementary Conditions**
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of receipt of the preliminary 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, Engineer, 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, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer 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 6.05 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, Engineer will promptly make a final inspection with Owner and 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 Engineer, 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 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall 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 disputes that Contractor believes are unsettled; and
 - 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.
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. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment,

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 Engineer's written recommendation of final payment.
- D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor. **See Supplementary Conditions**

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

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 terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then 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 other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, 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 therefrom.
- B. If 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 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 correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

- C. 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.
- D. 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.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

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 and Engineer. 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, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

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 public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten 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) 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 seven 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 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. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. 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 shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, 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 on account of loss of anticipated overhead, profits, or revenue, 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 court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do 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 Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, 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; and
 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

See Supplementary Conditions

ARTICLE 18 – MISCELLANEOUS

18.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

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 Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 shall not constitute a waiver of that provision, nor shall 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 or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

00800 – SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

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 thereto.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 *Defined Terms*

SC-1.01.A.49 Add the following new paragraph immediately after Paragraph 1.01.A.48:

Abnormal Weather Conditions – Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should be considered Abnormal Weather Conditions.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01.A. Amend the last sentence of Paragraph 4.01.A by striking out the following text:

“In no event will the Contract Times commence run later than the sixtieth day after the day of the Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.”

SC-4.03 *Reference Points*

SC-4.03.A Delete Paragraph 4.03.A in its entirety and insert the following in its place:

Owner will provide line and grade staking for the Work as indicated in Division 1 – General Requirements.

SC-4.05 *Delays in Contractor’s Progress*

SC-4.05.A. Amend Paragraph 4.05.C.2 by striking out the following text:

“abnormal weather conditions;”

and inserting the following text:

Abnormal Weather Conditions;

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Subsurface and Physical Conditions

SC 5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:

- A. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

SC-5.06 Hazardous Environmental Conditions

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.03 Contractor’s Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

- K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

- 1. Workers’ Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	<u>Statutory</u>
Federal, if applicable (e.g., Longshoreman’s):	<u>Statutory</u>

Employer’s Liability:

Bodily injury, each accident	\$ <u>100,000</u>
Bodily injury by disease, each employee	\$ <u>500,000, Policy Limit</u>
Bodily injury/disease aggregate, each employee	\$ <u>100,000</u>

- 2. Contractor’s Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	\$ <u>2,000,000</u>
Products - Completed Operations Aggregate	\$ <u>1,000,000</u>
Personal and Advertising Injury	\$ <u>1,000,000</u>
Each Occurrence (Bodily Injury and Property	\$ <u>1,000,000</u>

Damage) _____

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person	\$ 2,000,000
Each accident	\$ 2,000,000

Property Damage:

Each accident	\$ 2,000,000
Annual aggregate	\$ 2,000,000

4. Excess or Umbrella Liability:

Per Occurrence	\$ 1,000,000
General Aggregate	\$ 1,000,000

5. Contractor's Pollution Liability:

Each Occurrence	\$ N/A
General Aggregate	\$ N/A

If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following: None.

7. Contractor's Professional Liability:

Each Claim	\$ N/A
Annual Aggregate	\$ N/A

8. Property Damage Liability Insurance will provide Explosion, Collapse, and Underground coverages where applicable.

9. Products and Completed Operations Insurance shall be maintained for a minimum period of two (2) years after final payment and Contractor shall continue to provide evidence of such coverage to Owner on an annual basis during period of coverage.

SC-6.05 *Property Insurance*

SC-6.05.A. Delete Paragraph 6.05.A of the General Conditions and substitute the following in its place:

Owner will not provide property insurance for the Work. Contractor shall be responsible for any physical loss or damage to the Work until Substantial Completion. Contractor, at its option, can purchase Builder's Risk Insurance to cover its risk.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02 *Labor; Working Hours*

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.06 *Concerning Subcontractors, Suppliers, and Others*

SC 7.06.A Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:

The Contractor shall not award work valued at more than 50 percent of the Contract Price to the Subcontractor(s) without prior written approval of the Owner.

SC-7.06.P. Add the following new paragraph immediately after Paragraph 7.06.O:

Contractor shall submit a list of subcontractors as indicated on the Bid Form. In accordance with Wis. Adm. Code, ch. DWD 294, work on this Project shall not be subcontracted to a Contractor on the Wis. Dept. of Workforce Development list of debarred employers. No increase in the Contract Price or Contract Time shall be allowed due to rejection of a debarred employer.

SC-7.09 *Taxes*

SC 7.09 Add a new paragraph immediately after Paragraph 7.09.A:

- B. Owner is exempt from payment of sales and compensating use taxes of the State of Wisconsin and of cities and counties thereof on all materials to be incorporated into the Work as per 2015 Wisconsin Act 126 and Wisconsin State Statute 77.54 (9m).
1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 2. Owner's exemption **does not** apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials **not** incorporated into the Work.

3. Owner's exemption does not apply to highway, street, or road work materials for the Project.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 *Project Representative*

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
 1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
 2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
 3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
 4. Liaison:
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
 5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
 6. Shop Drawings and Samples:
 - a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor and notify Engineer of availability of Samples for examination.
 - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. Inspections, Tests, and System Start-ups:
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
10. Records:
 - a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
 - b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
 - c. Maintain records for use in preparing Project documentation.
11. Reports:
 - a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
 - c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.
14. Completion:
- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
 - b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
 - c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:

- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
- 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
- 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
- 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.
- 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

SC-11.04 Change of the Contract Price

S.C. 11.04.C.2.a Delete Paragraph 11.04.C.2.a in its entirety and insert the following in its place:

For costs incurred under Paragraph 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be five (5) percent;

S.C. 11.04.C.2.c Amend the first sentence of Paragraph 11.04.C.2.c by striking out:

“(1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and”

and replacing it with the following:

(1) a fee of five (5) percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and.

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

SC-13.01 Cost of the Work

SC 13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Use Rate book appropriate for the Project. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include 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, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools.

SC 13.03.E Delete Paragraph 13.03.E in its entirety and insert the following in its place:

- E. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
1. if the extended price of a particular item of Unit Price Work amounts to 25 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
 2. if there is no corresponding adjustment with respect to any other item of Work; and
 3. if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01 Progress Payments

S.C. 15.01.B.3 Add the following language at the end of Paragraph 15.01.B.3:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

S.C. 15.01.B.4.-5. Add the following language at the end of Paragraph 15.01.B.3:

4. Applications for Payment shall be submitted on the form provided by Engineer in which Contractor certifies that all previous progress payments received have been applied to discharge obligations incurred in connection with the Work, that title to all Work will pass to Owner at time of payment, and that all Work covered by the Application for Payment is in accordance with the Contract Documents.
5. Applications for Payment shall be submitted once per month by the date indicated by Engineer. Failure to submit an Application for Payment by the required date may result in delay of its review and approval by one month.

S.C. 15.01.D.1 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

1. 60 days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

S.C. 15.01.E.4 Add the following new Paragraph after Paragraph 15.01.D.3:

In the event Owner receives notice from any person, subcontractor, supplier, or other third party, that Contractor has failed to pay such party for Work performed in accordance with the Contract Documents, Contractor shall, at request of Owner, and in

no more than 10 calendar days, provide all documentation Owner believes necessary to determine whether such payment is due, or reasons for non-payment of disputed amounts. In the event Owner determines a claim to be valid, Owner may withhold from Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay such claim until satisfactory documentation is furnished that the liability has been fully discharged or reasons for non-payment of disputed amounts are provided by Contractor. In the event a claim is valid and payment is due, or in the absence of the requested documentation, Owner may authorize direct or two-party payment of any unpaid bills. In no event shall this provision be construed to impose any obligations upon Owner or Engineer to either Contractor or Contractor's surety (if any).

SC-15.03 Substantial Completion

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-15.06 Final Payment

SC 15.06.D Amend Paragraph 15.06.D by striking out the following text:

"Thirty"

and insert:

"Sixty"

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.01 Methods and Procedures

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

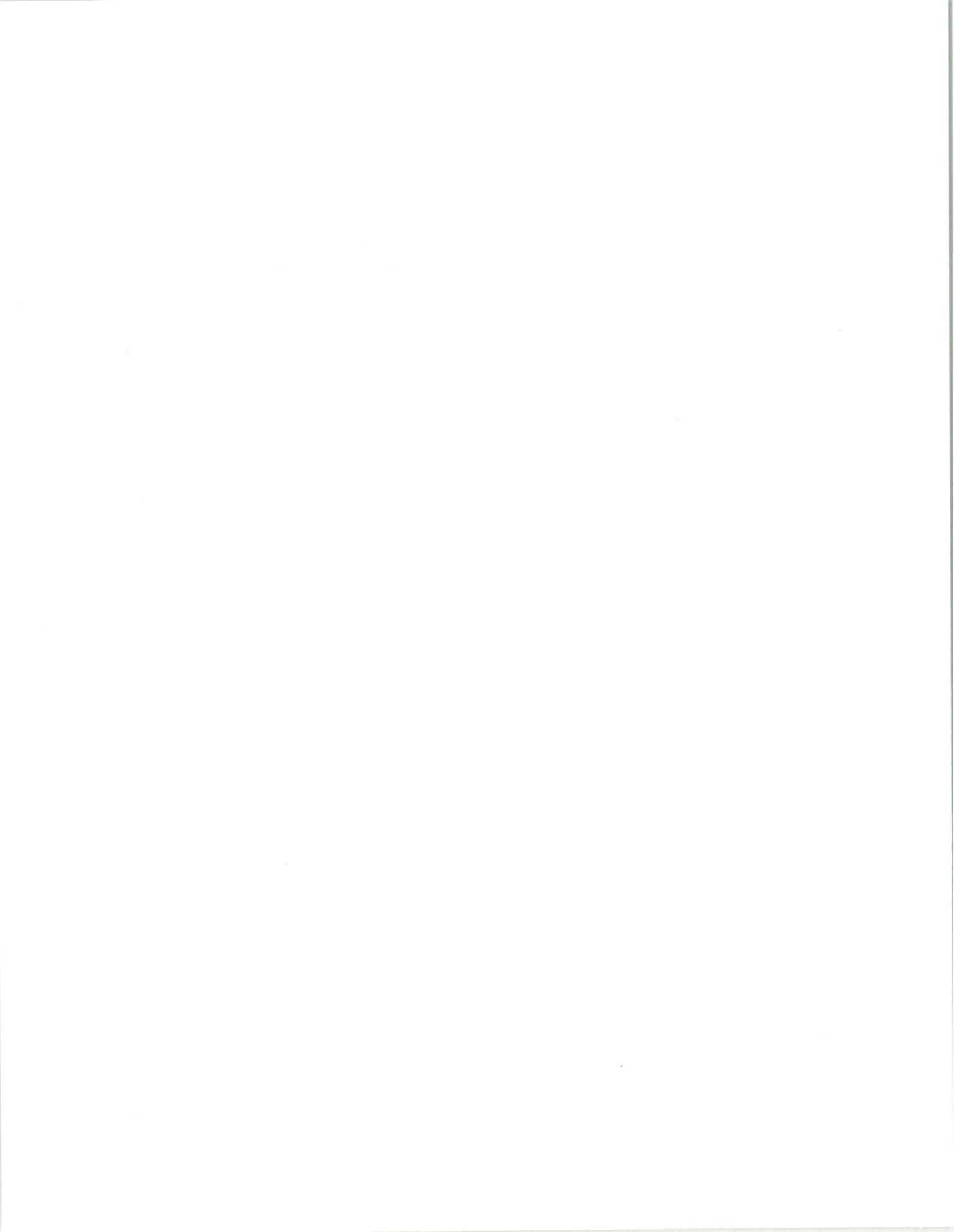
- A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of the American Arbitration Association subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

- C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

00850-WAGE RATES AND LABOR STANDARDS

NEW PREVAILING WAGE LAW – WISCONSIN

Effective January 1, 2017, **2015 Wisconsin Act 55** (the budget bill) repeals the State Prevailing Wage Law for local governmental units such as villages, towns, cities, school districts, or sewerage districts. No State wage rates are applicable for this Project.



00940 - WORK CHANGE DIRECTIVE NO. _____

Date of Issuance:	Effective Date:
Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

- Non-agreement on pricing of proposed change.
- Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price	\$	[increase] [decrease].
Contract Time	days	[increase] [decrease].

Basis of estimated change in Contract Price:

- | | |
|---|-------------------------------------|
| <input type="checkbox"/> Lump Sum | <input type="checkbox"/> Unit Price |
| <input type="checkbox"/> Cost of the Work | <input type="checkbox"/> Other |

RECOMMENDED:

AUTHORIZED BY:

RECEIVED:

By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____

Title: _____



Date of Issuance:	Effective Date:
Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____
 Title: _____

00942 - FIELD ORDER NO. _____

Date of Issuance:

Effective Date:

Owner:

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

_____ Specification(s)

_____ Drawing(s) / Detail(s)

Description:

Attachments:

ISSUED:

RECEIVED:

By: _____
Engineer (Authorized Signature)

By: _____
Contractor (Authorized Signature)

Title: _____

Title: _____

Date: _____

Date: _____

Copy to: Owner



SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Contract description.
2. Work by Owner or other Work at the Site.
3. Owner-furnished products.
4. Contractor's use of Site.
5. Future work.
6. Work sequence.
7. Owner occupancy.
8. Permits.
9. Specification conventions.
10. Miscellaneous provisions.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes the installation of a temporary water pressure system, completing the necessary repairs and modifications to the existing elevated steel hydropillar water storage tank, and repainting the interior and exterior of the elevated steel hydropillar water storage tank.
- B. Perform Work of each Contract under separate Contract with Owner according to Conditions of Contract.
- C. Work of each separate Contract is identified in the following and on Drawings:
 1. **Contract #1 -**
 - a. Location: 907 Ridge Street (Tower Park)
 - b. Description of Work to be completed: The necessary repairs and modifications to the existing elevated 400,000-gallon hydropillar water storage tank and repainting the interior and exterior of the elevated hydropillar water storage tank while providing a temporary water pressure system. Work includes:
 - 1) Mobilization
 - 2) Temporary Water Pressure System
 - 3) Structural Modifications:
 - a) Repair Welding;
 - b) Caulking of joints;
 - c) Welding bolted roof-framing;
 - d) Removal and replacement of cable safety climb device;
 - e) Miscellaneous welding of joints;
 - f) Installation of two (2) bars on the top of the fill pipe;
 - g) Replacement of existing light fixtures;
 - h) Installation of cable brackets inside drywell tube;

- i) Installation of a new manway and step off platform;
- j) Seal welding completed as per Tower Inspection Report (Please refer to Appendix A);
- k) Ports in condensate platform floor;
- l) Replacement of wrap around pipe insulation;
- m) Replacement of sample taps;
- n) Replacement of sump pump in valve pit;
- o) Padlock for the roof access manway;
- p) Replacement of tank vent;
- q) Installation of roof ventilation manways;
- r) Installation of handrail on hydropillar roof;
- s) Replacement of double aviation lights on top of hydropillar;
- t) Installation of four-inch (4") diameter coupling and covers for cables - four (4) each;
- u) Replacement of steel double doors at the base of the tower pedestal;
- v) Installation of an overflow pipe screen retainer; and
- w) Metal surface repairs
- 4) Interior Wet Blast and Coating
- 5) Interior Dry Area Spot Repair and Coating
- 6) Exterior Area Blast and Coating
 - a) Provide Containment area/system
- 7) Relocation of existing antennas to the proposed roof safety railing
- 8) Exterior Lettering (MINERAL POINT) – three (3) each
- 9) COR-TEN column pressure washing and cleaning
- 10) Circulation Pump **(Alternate 'A')**
- 11) Removal of Existing Cathodic Protection System/Equipment **(Alternate 'B')**
- 12) Cathodic Protection System/Equipment **(Alternate 'B')**
- 13) Tower Disinfection and Testing
- 14) Erosion Control
- 15) Traffic Control
- 16) Landscaping and Restoration

1.3 WORK BY OWNER OR OTHERS

- A. If Owner-awarded contracts interfere with each other due to work being performed at the same time or at the same Site, Owner will determine the sequence of work under all contracts according to "Work Sequence" and "Contractor's Use of Site" Articles in this Section.
- B. Coordinate Work with utilities of Owner and public or private agencies.
 - 1. Alliant Energy, Charter Communications, and Frontier Communications may have underground and overhead facilities within the project limits. The Contractor is responsible for contacting all utilities for location and coordination of utilities within the Project limits.
- C. Owner will complete the following Work:

1. Owner will maintain and operate the municipal well in coordination with the Contractor's operation of the temporary water pressure system during the tower repainting and repairs.
 2. Owner will notify residents of water outages for water main connections (if necessary), 24 hours prior to the necessary outage.
- D. Owner will remove and retain possession of the following items before start of Work:
1. None.
- E. Remove and deliver to Owner the following items before and/or during the Work:
1. Existing Cathodic Protection System.
 2. Existing Aviation warning Lights.
- 1.4 OWNER-FURNISHED PRODUCTS
- A. Items furnished by Owner for installation by Contractor:
1. None.
- 1.5 CONTRACTOR'S USE OF SITE
- A. Limit use of Site to allow:
1. Work by Owner.
 2. Work by Others.
 3. Use of Site by the public:
 - a. The elevated steel hydropillar water storage tank is located within Tower Park, which is used by local residents and the general public. The Contractor shall limit the Project limits to the area adjacent to Well #3 as much as feasible to allow the general public continued use of Tower Park.
 - b. Keep driveways and entrances servicing premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - c. When the Contractor is working directly in front of a business or property, the Contractor is to minimize access restriction to the best of its ability. Contractor must clean up the Project site before leaving each evening to result in an acceptable traffic and pedestrian access to the residences, businesses, and public entities.
- B. Construction Operations: Limited to areas indicated and specified.
1. Contractor shall have full use of the Project site for construction operations as allowed by law, ordinances, permits, easement agreements, and the Contract Documents.
 2. The Project site is limited to property boundaries, rights-of-way, easements, and other areas designated in the Contract Documents.
 3. Provide protection and safekeeping of material and products stored on or off the Project site.
 4. Move any stored material or products which interfere with operations of Owner or other Contractors.

C. Time Restrictions for Performing Work:

1. As described in General Conditions, GC-7.02B and Supplementary Conditions, SC-7.02B.

D. Utility Outages and Shutdown:

1. Any valve operation within the municipal water system shall be coordinated with the City Water System Operator(s) prior to completing any operations.
2. Coordinate and schedule utility outages with Owner.
3. Water system outages:
 - a. The contractor must provide a minimum of 48-hour notice to the Engineer and Owner for a scheduled shut-off of the water system. The water system cannot be shut-off during two (2) consecutive days. Water service to the affected properties must be reinstated by no later than 7:00 p.m. each night.
 - b. The contractor must provide a minimum of 24-hour notice to the property owner for single home water outages (i.e. hooking up water service).

1.6 FUTURE WORK

- A. None.

1.7 WORK SEQUENCE

- A. Conduct the Work in the following phases and order, with each phase substantially complete before the beginning of the next phase. The Work **must be substantially completed** by the dates set forth in Article 4 of Section 00520 – Suggested Form of Agreement Between Owner and Contractor for Construction Contract. All Work must be continuous and uninterrupted once started.

1. The following items are required to be completed by the date set forth in Article 4 of Section 00520:
 - a. All Work – Repairs, Blasting, and Painting.
 - b. Alternate '1-A' – Circulation Pump, if awarded.
 - c. Alternate '1-B' – Cathodic Protection, if awarded.

1.8 PERMITS

- A. Furnish necessary permits for construction of Work including the following:

1. The contractor is responsible for disposal of all blasting, paint material, and other disposal debris encountered during construction and all necessary permitting and approvals required with regards to the disposal material.
2. The contractor is responsible for locating all disposal sites and all necessary permitting required with regards to the disposal sites.

1.9 SPECIFICATION CONVENTIONS

- A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.
- B. Sections in Division 01 govern the execution of Work of all Sections in the Specifications.
- C. Industry Standards:
 - 1. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
 - 2. Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
 - 3. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
 - 4. Each section of the specifications generally includes a list of reference standards normally referred to in that respective section. The purpose of this list is to furnish the Contractor with a list of standards normally used for outlining the quality control desired on the Project. The lists are not intended to be complete or all inclusive, but only a general reference of standards to which are regularly referred.
 - 5. Each entity engaged in construction on the Project shall be familiar with industry standards applicable to its construction activity. Copies of the applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available upon request.
- D. The "Standard Specifications for Sewer and Water Construction in Wisconsin", Sixth Edition, December 22, 2003 with Addendum No. 1, December 22, 2004, will govern the utility construction if a specific item is not covered in these Technical Specifications.
- E. The State of Wisconsin, Department of Transportation, "Standard Specifications for Highway and Structure Construction", Current Edition including all Supplemental Specifications, will be referenced in these specifications for road work and traffic control performed on this Project. The WISDOT Specifications will govern for street construction and traffic control if a specific item is not covered in these Technical Specifications.
- F. It is the responsibility of the Contractor to obtain copies of both the "Standard Specifications" and the "State Specifications".

1.10 MISCELLANEOUS PROVISIONS

- A. All erosion control measures must be installed and implemented prior to beginning any construction activity. The erosion control measures must be maintained for the entire duration of the Project. If erosion control measures are damaged due to Contractor negligence, the Contractor will be responsible for all replacement. Also, if the Contractor's methods of construction

cause unanticipated erosion, then the Contractor will be responsible, at no cost to the Owner, for installing and maintaining the necessary erosion control items.

- B. All dust control and containment is the responsibility of Contractor from commencement of the Work until completion of the Project, including all weekdays and weekends.
- C. The Contractor is responsible for all traffic control and devices for the Project from commencement of the Work until completion. No two (2) adjacent street intersections can be closed at the same time. However, if the Contractor requires additional traffic control due to their construction methods (i.e. flaggers, etc.), then they will be responsible for providing such. The Contractor must conform to the Manual of Uniform Traffic Control Devices (MUTCD), the requirements of the Wisconsin Department of Transportation, and the City of Mineral Point.
- D. The Contractor is responsible for protecting any wood picket fence, railroad tie retaining wall, limestone rock retaining wall, private guy wire, yard landscaping, block retaining wall, small tree, wood fence, landscape timber retaining wall, concrete wall, dog fence (located or not), irrigation piping (located or not), landscaping pavers, landscaping rock, curb and gutter, sidewalk, etc. to remain as specified on plan. If any of these items are disturbed due to the construction work, they must be replaced back to their original condition. All trees that are not noted for removal are to be protected during construction. Any branches that overhang the Project area will be trimmed neatly upon approval by Owner and prior to work commencing.
- E. For any street and traffic signs removed during construction, Contractor must provide temporary signage. Any removal and reinstallation or replacement of the yard landscaping, street and traffic signs, wood picket fence, rock and decorative landscaping, brick paver sidewalk, retaining walls, mailboxes, and street components as necessary or as shown on the plans or instructed by the Owner or Engineer, are the responsibility of the Contractor and must be replaced back to its original condition.
- F. All excavated material from the Project construction shall be hauled, and properly disposed, off the Project Site. All concrete and bituminous materials must be broken into small, manageable pieces and hauled, and properly disposed, off the Project Site. The Owner must approve all haul routes planned to be used by the contractor.
- G. All saw cutting of existing concrete and bituminous pavement and removal of existing pavement, driveways, bituminous pavement, bituminous curb, brush, shrubs, and bushes, as shown on the plans or directed by the Engineer, is the responsibility of the Contractor.
- H. Any existing pavement or base course disturbed due to the construction work must be replaced, at a minimum, to its current thickness. Any concrete, bituminous pavement, or landscaping that needs to be replaced due to negligence on the part of the contractor shall be replaced and will not be paid.
- I. The Contractor is responsible for replacement of all disturbed lawn and street components caused by its construction activities that are within and beyond the construction limits. After the Project has been stabilized, it is the Contractor's responsibility to remove all non-permanent best management practices (BMP's) and complete any necessary restoration as a result of the removal of these BMP's.

- J. Contractor is responsible for obtaining all permits and approvals for completing the Project.
- K. Contractor must conform to all applicable laws, ordinances, and regulations.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 011000



SECTION 011400 - MOBILIZATION, BONDS, and INSURANCE

PART 1 - GENERAL

1.1 SCOPE

- A. This item shall consist of mobilization of personnel, equipment, and supplies at the project site in preparation for beginning work on contract items and the payment of bonds and insurance. Mobilization shall include, but is not limited to, the movement of equipment, personnel, material, supplies, etc. to the Project site and the establishment of office and other facilities, as necessary, prior to beginning the work. Multiple mobilizations shall be inclusive whether planned or unplanned due to Contractor's method of construction or due to Owner.
- B. The Contractor shall be responsible for any incidental cleaning of the tank required after draining. It is expected that there will be some sludge and sediment in the bottom of the tank after it is drained. The sludge/sediment in the bottom of the tank shall be loaded into a truck and hauled away for proper disposal. This material and other materials cleaned from the tank cannot be disposed of on site and must be hauled away.

1.2 UNIT PRICE- MEASUREMENT AND PAYMENT

- A. Mobilization, Bonds, and Insurance:
 - 1. Basis of Measurement:
 - a. When not listed in the Bid Form, all "Mobilization, Bonds, and Insurance" costs will be considered incidental Work for which no separate payment will be made.
 - b. When listed in the Bid Form, payment for "Mobilization, Bonds, and Insurance" to be made at the lump sum price paid out as indicated below.
 - 2. Basis of Payment: **Amount shall not exceed seven percent (7%) of the total contract amount**, which shall be paid as follows:
 - a. At 10% of Contract Earned, 50% of bid item to be paid, exclusive of payment for "materials on hand".
 - b. At 15% of Contract Earned, 75% of bid item to be paid, exclusive of payment for "materials on hand".
 - c. At 25% of Contract Earned, 100% of bid item to be paid, exclusive of payment for "materials on hand".

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 011400



SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Preinstallation meetings.
- F. Closeout meeting.
- G. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements .
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.
- D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- E. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion.
- F. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice to Proceed.

B. Attendance Required: Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, Construction Manager, major Subcontractors, and Contractor.

C. Minimum Agenda:

1. Submission of executed bonds and insurance certificates.
2. Distribution of Contract Documents.
3. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
4. Designation of personnel representing parties in Contract, and Engineer.
5. Communication procedures.
6. Procedures and processing of requests for interpretations, field decisions, field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.
8. Critical Work sequencing.
9. Scheduling activities of Subcontractors.

D. Engineer: Record minutes and distribute copies to after the meeting.

1.4 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work as required by the Owner.

B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

C. Attendance Required: Job superintendent, major Subcontractors Contractors and suppliers, and Engineer, Owner, as appropriate to agenda topics for each meeting.

D. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

E. Engineer: Record minutes and distribute copies to participants.

1.5 PREINSTALLATION MEETINGS

- A. When required in individual Specification Sections, convene preinstallation meetings at Project Site before starting Work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Engineer seven days in advance of meeting date.
- D. Prepare agenda and preside over meeting:
 - 1. Review conditions of installation, preparation, and installation procedures.
 - 2. Review coordination with related Work.
- E. Record minutes and distribute to participants. to

1.6 CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
- B. Attendance Required: Contractor Construction Manager, major Contractors major Subcontractors, Engineer, Owner, and others appropriate to agenda.
- C. Notify Engineer seven days in advance of meeting date.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013000



SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Concealed Work photographs.
- B. Related Requirements:
 - 1. Sections 331617 "Structural Modifications & Repairs" and 099713 "Water Storage Tank Painting" for photographic documentation of repairs and painting.

1.3 INFORMATIONAL SUBMITTAL

- A. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos on CD-ROM or thumb-drive
 - 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Date photograph was taken.

1.4 FORMATS AND MEDIA

- A. Metadata: Record accurate date and time and GPS location data from camera.
- B. File Names: Name media files with date Project area and sequential numbering suffix.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
- B. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Welding and welded seams prior to painting.
 - 2. Concealed painted areas.
 - 3. Piping and insulation.
 - 4. Electrical conduit.

5. Underground utilities.
6. Underslab services.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Use of electronic CAD files of Project Drawings.
- G. Shop Drawings.
- H. Samples.
- I. Other submittals.
- J. Design data.
- K. Test reports.
- L. Certificates.
- M. Manufacturer's instructions.
- N. Manufacturer's field reports.
- O. Contractor review.
- P. Engineer review.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.
- B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- B. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite Project, and deliver to Engineer at business address submit electronic submittals via email as PDF electronic files. Coordinate submission of related items.
- E. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- F. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- G. Allow space on submittals for Contractor and Engineer review stamps.
- H. When revised for resubmission, identify changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- J. Submittals not requested will not be recognized nor processed.
- K. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Comply with Section 013000 - Administrative Requirements.

1.5 PROPOSED PRODUCT LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PROJECT SUBMITTALS

- A. Submit to the Engineer, a minimum of ten (10) business days before the pre-construction conference for review and approval, in conformance with this specification, the following items:
 - 1. List of sub-contractors.

2. Construction schedule.
 3. Welder certifications.
 4. Welding procedures.
 5. Containment or environmental compliance plan.
 6. TCLP sampling plan.
 7. Certified statement on lead free coatings.
 8. Abrasive and coating materials, including product data sheets and MSDS.
 9. Coating procedures and work plan.
 10. Color selection draw-downs for each area and color selected, including logo with manufacturer, color name, and color number.
 11. Epoxy or urethane caulking material.
 12. Cost breakdown statement of Structural Modifications in Article 1.1.
 13. Tank interior cleaning and disinfection procedures.
 14. Double aviation red obstruction light, Type L-810.
 15. Special procedures, i.e., dehumidification.
 16. Safety climb/fall protection system.
 17. LED Light fixtures.
 18. Steel double service door.
 19. Interior and exterior rigging plan. (in reference to type of rigging, i.e., electric/air motors, boom styles, etc.).
- B. Submit electronically shop drawings for the following items:
1. Bowl/Shell pressure style manway, 24-inches in diameter.
 2. Roof ventilation manway, 24-inches in diameter.
 3. Obstruction light bracket.
 4. Pedestrian door replacement.
 5. Replacement sump pump.
 6. Overflow pipe screen retainer.
 7. Roof vent/finial with removable cover.
 8. Roof handrail.
 9. Safety climb device.
 10. Tank drain modification.
 11. Pedestal stand-off brackets.
 12. Drywell tube cable brackets.
 13. Roof mounted anchor point.

14. Steel double service doors.

1.7 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit electronic submittals via email as PDF electronic files.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.8 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 - 1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 - 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 - 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
 - 4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
 - 5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
 - 6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

- C. Costs: \$250 per file, plus administrative fee of \$50 per request paid in advance by certified check or money order payable to Engineer.

1.9 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit electronic submittals via email as PDF electronic files.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.10 SAMPLES

- A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Engineer for aesthetic, color, and finish selection.
 - 2. Submit Samples of finishes, textures, and patterns for Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.11 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 017000 - Execution and Closeout Requirements.
- B. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.
- C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.13 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.14 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.15 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit report within 5 days of observation to Engineer for information.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.16 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

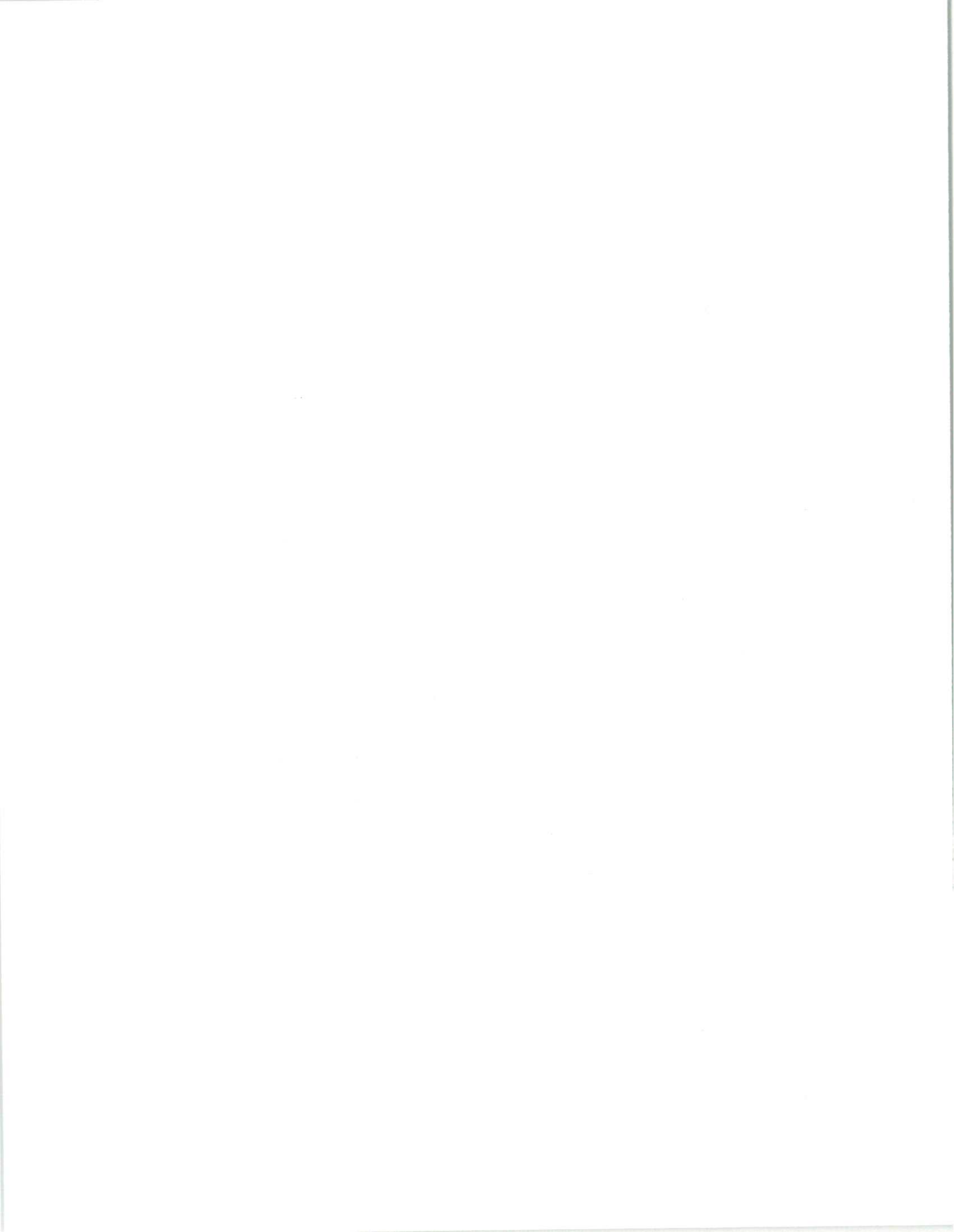
1.17 ENGINEER REVIEW

- A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.
- B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.
- E. Owner may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013300



SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- A. Quality control.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Testing and inspection services.
- F. Manufacturers' field services.

1.2 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Products, materials, and equipment may be subject to inspection by Engineer and Owner at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date for receiving Bids except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 LABELING

- A. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.
- B. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 TESTING AND INSPECTION SERVICES

- A. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.
 - 1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time specialist and responsible officer.
 - 2. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Engineer.
- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer or Owner.

- D. Reports shall be submitted by independent firm to Engineer, Contractor, and authorities having jurisdiction indicating observations and results of tests and compliance or noncompliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as noncompliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 24 hours before expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.
- F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Agency Responsibilities:
 - 1. Test Samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
 - 3. Perform indicated sampling and testing of products according to specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.
 - 6. Perform additional tests required by Engineer.
 - 7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit copies of report to Engineer, Contractor, and authorities having jurisdiction. When requested by Engineer, provide interpretation of test results. Include the following:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and Specification Section.
 - 6. Location in Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- J. Limits on Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

1.7 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, and testing, adjusting, and balancing of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer is subject to approval of Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 013300 - Submittal Procedures, "Manufacturer's Field Reports" Article.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Temporary facilities under Construction Management Agreement.
- B. Temporary Utilities:
 - 1. Temporary electricity.
- C. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
 - 5. Project identification.
 - 6. Traffic regulation.
- D. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Dust control.
 - 6. Erosion and sediment control.
 - 7. Noise control.
 - 8. Pest and rodent control.
 - 9. Pollution control.
- E. Removal of utilities, facilities, and controls.

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. Traffic Control:
 - 1. Basis of Measurement: Incidental to the Project.
Basis of Payment: Includes furnishing, installing, and maintaining all traffic control devices as required or as indicated on the plans or instructed by Engineer; storage of all existing signs that are to be removed prior to the detour (if applicable as shown on the plans) and replaced once the detour is complete; covering of existing signs; removal of traffic control devices and restoring existing signage once construction is completed.

1.3 TEMPORARY FACILITIES UNDER CONSTRUCTION MANAGEMENT AGREEMENT

A. Temporary Provisions Provided by Construction Manager:

1. Temporary barriers, barricades, covered walkways, fencing, exterior closures, and interior closures.
2. Temporary field offices.
3. Cleaning during construction.
4. Access roads and approaches.
5. Temporary sanitary facilities.
6. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
7. Temporary tree and plant protection.
8. Temporary provisions for protection of installed Work.

1.4 TEMPORARY ELECTRICITY

- #### A. Provide and pay for power service required from utility source as needed for construction operation.

1.5 FIELD OFFICES AND SHEDS

- #### A. Do not use existing facilities for field offices or for storage.

- #### B. Construction: Portable or mobile buildings, or buildings constructed with floors raised aboveground, securely fixed to foundations with steps and landings at entrance doors.

1. Construction: Structurally sound, secure, weathertight enclosures for office and storage spaces. Maintain during progress of Work; remove enclosures when no longer needed.
2. Thermal Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
3. Exterior Materials: Weather-resistant, finished in one color acceptable to Engineer.
4. Interior Materials in Field Offices: Sheet-type materials for walls and ceilings, prefinished or painted; resilient floors and bases.
5. Lighting for Field Offices: 50 ft-C at desktop height; exterior lighting at entrance doors.
6. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.

- #### C. Environmental Control:

1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions.

- #### D. Storage Areas and Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and inspection of products to suit requirements in Section 016000 - Product Requirements.

- #### E. Preparation: Fill and grade Sites for temporary structures sloped for drainage away from buildings.

- F. Maintenance and Cleaning:
 - 1. Weekly janitorial services for field offices; periodic cleaning and maintenance for sheds and storage areas.
 - 2. Maintain walks free of mud, water, snow, and the like.
- G. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas to same or better condition as original condition.

1.6 HEALTH AND SANITARY FACILITIES

- A. Prior to commencing any of the work on this Contract and thereafter at all times, the CONTRACTOR shall provide a suitable self-contained type privy. Said privy shall be satisfactorily serviced and kept in a sanitary condition at all times.
- B. No one, the Contractor, Contractor's employees or anyone under Contractor's control, shall work in the tank if that person has been under or has needed physician's care or has had a contagious or communicable disease within a seven-day period prior to entering or working on said tank.

1.7 VEHICULAR ACCESS

- A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.
- D. Locate as approved by Engineer.
- E. Provide unimpeded access for emergency vehicles. Maintain 20-foot-wide driveways with turning space between and around combustible materials.
- F. Provide and maintain access to fire hydrants and control valves free of obstructions.
- G. Provide means of removing mud from vehicle wheels before entering streets.
- H. Use designated existing on-Site roads for construction traffic.

1.8 PARKING

- A. Arrange for temporary gravel surface parking areas to accommodate construction personnel.
- B. Locate as approved by Engineer.
- C. If Site space is not adequate, provide additional off-Site parking.

- D. Use of designated areas of existing on-Site streets and driveways used for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.
- E. Use of existing parking facilities used by construction personnel is permitted.
- F. Do not allow heavy vehicles or construction equipment in parking areas.
- G. Do not allow vehicle parking on existing pavement.
- H. Permanent Pavements and Parking Facilities:
 - 1. Bases for permanent roads and parking areas may be used for construction traffic.
 - 2. Avoid traffic loading beyond paving design capacity. Tracked vehicles are not allowed.
 - 3. Use of permanent parking structures is permitted.
- I. Maintenance:
 - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
 - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.
- J. Removal, Repair:
 - 1. Remove temporary materials and construction before Substantial Completion.
 - 2. Repair existing facilities damaged by use, to original condition.
- K. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.9 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.
- C. Broom and vacuum clean interior areas before starting surface finishing and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from Site weekly and dispose of off-Site.

1.10 PROJECT IDENTIFICATION

- A. Project Identification Sign:

1. One painted sign of construction, design, and content shown on Drawings, location designated.
 2. Content:
 - a. Project number, title, logo, and name of Owner.
 - b. Names and titles of authorities.
 - c. Names and titles of Engineer and Consultants.
 - d. Name of Prime Contractor and major Subcontractors.
 3. Graphic Design, Colors, and Style of Lettering: Designated by Engineer.
- B. Project Informational Signs:
1. Painted informational signs of same colors and lettering as Project identification sign or standard products; size lettering for legibility at 100 -foot distance.
 2. Provide municipal traffic agency directional traffic signs to and within Site.
 3. No other signs are allowed without Owner's permission except those required by law.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.
- D. Show content, layout, lettering, color, and sizes.
- E. Installation:
1. Install Project identification sign within 15 days after date established by Owner-Contractor Agreement.
 2. Erect at Project Site.
 3. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
 4. Install sign surface plumb and level, with butt joints. Anchor securely.
 5. Paint exposed surfaces of sign, supports, and framing.
- F. Maintenance: Maintain clean signs and supports; repair deterioration and damage.
- G. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.
- 1.11 TRAFFIC REGULATION
- A. Signs, Signals, and Devices:
1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
 2. Automatic Traffic Control Signals: As approved by local jurisdictions.
 3. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
 4. Flag Person Equipment: As required by authorities having jurisdiction.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- D. Haul Routes:
 - 1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
 - 2. Confine construction traffic to designated haul routes.
 - 3. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.
- E. Traffic Signs and Signals:
 - 1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
 - 2. Provide, operate, and maintain automatic traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
 - 3. Relocate signs and signals as Work progresses, to maintain effective traffic control.
- F. Removal:
 - 1. Remove equipment and devices when no longer required.
 - 2. Repair damage caused by installation.
 - 3. Remove post settings.

1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations .
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
 - 1. Barricade Construction: As indicated on Drawings.
 - 2. Covered Walkway Construction: As indicated on Drawings.
- C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
 - 1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
 - 2. Provide 6' high barriers around drip line, with access for maintenance as indicated on the drawings.
 - 3. Replace trees and plants damaged by construction operations.
- D. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.13 ENCLOSURES AND FENCING

- A. Construction: Commercial-grade chain-link fence or as indicated on the drawings. Plastic construction netting as applicable.

1.14 SECURITY

A. Security Program:

1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner's existing security system at Project mobilization.
3. Maintain program throughout construction period until Owner's acceptance precludes need for Contractor's security.

B. Entry Control:

1. Restrict entrance of persons and vehicles to Project Site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. Maintain log of workers and visitors and make available to Owner on request.
4. Coordinate access of Owner's personnel to Site in coordination with Owner's security forces.

1.15 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

1.16 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere.

1.17 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.

- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.
- F. Comply with sediment and erosion control plan indicated on Drawings.

1.18 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise from construction vehicles and noise produced by construction operations.

1.19 PEST AND RODENT CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work.

1.20 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.

1.2 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.
- E. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- F. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.

- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Provide off-Site storage and protection when Site does not permit on-Site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.

PART 2 - PRODUCTS

PART 3 - EXECUTION - Not Used

END OF SECTION 016000

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Field engineering.
- B. Closeout procedures.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Project record documents.
- F. Operation and maintenance data.
- G. Spare parts and maintenance products.
- H. Product warranties and product bonds.
- I. Examination.
- J. Preparation.
- K. Execution.
- L. Cutting and patching.
- M. Protecting installed construction.
- N. Final cleaning.

1.2 FIELD ENGINEERING

- A. Owner will locate and Contractor shall protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- B. Control datum for survey is indicated on Drawings.
- C. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

1.3 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
4. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
5. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
6. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:

1. When Contractor considers Work to be substantially complete, submit to Engineer:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
2. Within seven days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
3. Should Engineer determine that Work is not substantially complete:
 - a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.
4. When Engineer finds that Work is substantially complete, Engineer will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
5. After Work is substantially complete, Contractor shall:
 - a. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.

- b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Contractor affidavit of release of liens.
3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:

1. Within seven days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Engineer consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.
- B. Notify Engineer seven days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.
- H. Submit a written report according to Section 013300 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.

- B. Demonstrate Project equipment and instructed by manufacturer's representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at designated location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.

4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 5. Identify and locate existing buried or concealed items encountered during Project.
 6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 7. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 8. Field changes of dimension and detail.
 9. Details not on original Drawings.
- G. Submit PDF electronic files of marked-up documents to Engineer with claim for final Application for Payment.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - g. Safety precautions to be taken when operating and maintaining or working near equipment.
 3. Part 3: Project documents and certificates, including the following:
 - a. Shop Drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.9 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include table of contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.

- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
 - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
 - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Engineer for final decision.
- E. Allow for expansion of materials and building movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
 - 1. Refer questionable mounting heights choices to Engineer for final decision.
 - 2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.

- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.

- C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and nonconforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

- D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

- E. Cut masonry and concrete materials using masonry saw or core drill.

- F. Restore Work with new products according to requirements of Contract Documents.

- G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

- J. Identify hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.

- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

- D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

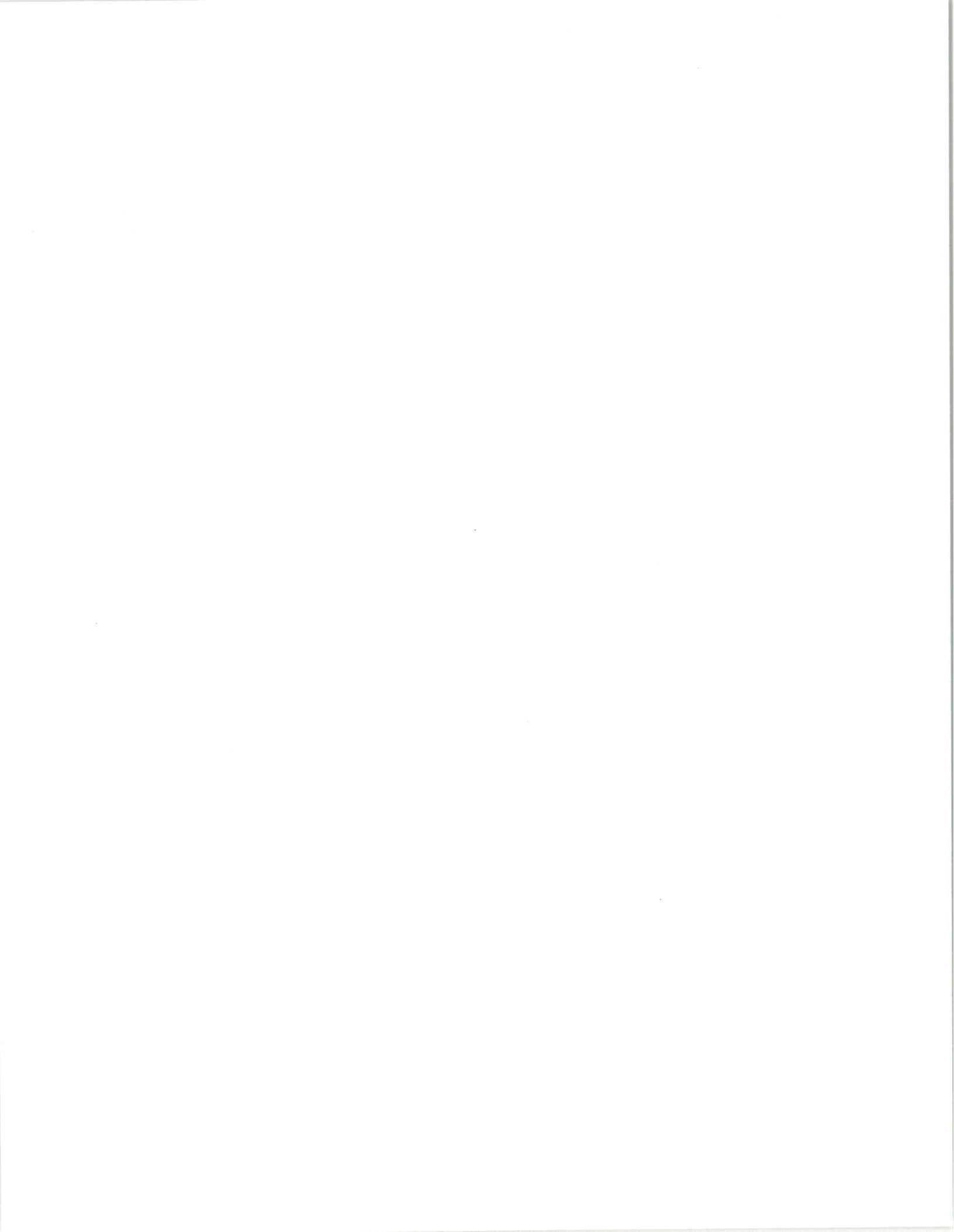
A. Execute final cleaning prior to final Project assessment.

B. Clean debris from structures, gutters, and drainage systems.

C. Clean Site; sweep paved areas, rake clean landscaped surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION 017000



SECTION 099713 - INTERIOR WET AREA ABRASIVE BLAST AND COATING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Painting tank interior wet area.
- C. Related Sections:
 - 1. Section 099714 – Interior Dry Area Spot Repair and Coating.
 - 2. Section 099715 – Exterior Area Abrasive Blast and Coating.
 - 3. Section 330110 - Water Tank Disinfection.
 - 4. Section 331617 - Water Storage Tank – Structural Modifications & Repairs.
 - 5. Appendix A – Elevated Water Tank Inspection Report.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Interior Wet Area Abrasive Blast and Coating:
 - 1. Basis of Measurement: By Lump Sum.
 - 2. Basis of Payment: Includes sandblasting; cleaning; all proper surface preparation for repainting; testing; DNR approval; all coats of required painting; temporary and permanent removals; disposal of spent abrasive and garbage; disinfection; and all materials, equipment, tools, machinery, labor, and construction means and methods necessary to complete the Interior Wet Area Abrasive Blast and Coating in place and ready for use.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 - 3. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test.
- B. American Water Works Association:
 - 1. AWWA D102 - Standard for Coating Steel Water Storage Tanks.
- C. NSF International:
 - 1. NSF 61 - Drinking Water System Components - Health Effects.
- D. SSPC: The Society for Protective Coatings:
 - 1. SSPC PA 1 - Shop, Field, and Maintenance Painting of Steel.
 - 2. SSPC SP 6 - Commercial Blast Cleaning.

3. SSPC SP 10 - Near-White Blast Cleaning.
- E. Wisconsin Department of Natural Resources Administrative Code
1. Section NR 811

1.4 PERFORMANCE REQUIREMENTS

- A. Exterior Paint Performance Test Requirements:
1. Exterior Exposure:
 - a. Method: Paint system applied to sandblasted steel panels, cured for a minimum of 7 days at 77 degrees F (25 degrees C) and exposed at 45 degrees facing South.
 - b. Performance Requirements: No blistering, cracking or delamination of film; not less than 85 percent gloss after 18 months exposure.
 2. Hardness:
 - a. Method: ASTM D3363.
 - b. Requirements: Minimum 6H.
 3. Humidity:
 - a. Method: ASTM D2247.
 - b. Requirements: No blistering, cracking, softening or delamination of film after 5,000 hours exposure.

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on finishing products.
- C. Samples:
 1. Submit two paper chip samples illustrating range of colors and textures available for each surface finishing product scheduled.
- D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

1.6 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted surfaces.

1.7 QUALITY ASSURANCE

- A. Paint:
 - 1. Comply with AWWA D102.
 - 2. Certified by NSF International in accordance with NSF 61, as acceptable for surfaces in contact with potable water.
- B. Obtain paint products from single source for Work specified in this section.
- C. Perform Work in accordance with the Wisconsin Department of Natural Resources Code, Section NR 811.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five (5) years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum five (5) years documented experience and having completed ten or more projects of similar size and scope of Work to the satisfaction and approval of the Owner.

1.9 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.11 COATING AND COATING PRODUCTS

- A. The coating and coating products used to complete the project shall be specified in the Bid Item Descriptions or an approved equal. The products of other manufactures comparable in quality and type will be acceptable if the following conditions are met:
 - 1. Satisfactory data is submitted on past performance of the product on other water storage tanks.
 - 2. The product complies with State of Wisconsin Health Department Standards.
 - 3. The Engineer approves the product.
 - 4. No request for substitution shall be considered unless prior written approval has been obtained seven (7) days prior to the bid opening.
- B. All materials shall be brought to the job site in the original sealed and labeled containers of the coating manufacturer and shall be subject to inspection by the Engineer.
- C. The Contractor shall submit to the Engineer, immediately upon completion of the job, Certification from the manufacturer indicating the quantity of each coating purchased. Such Certification shall refer to the square footage figures provided to the manufacturer and the Engineer by the Contractor.
- D. All coating ingredients shall conform to current applicable specifications of the American Society for Testing and Materials. No coating materials shall be reduced or thinned except as specified or recommended by the manufacturer of the coating. The coatings shall be thoroughly mixed and kept thoroughly stirred during application, when applicable.
- E. All coating for the interior surfaces that will or may be exposed to the storage water shall be a tasteless and nonpoisonous product designed for such usage and approved by the Wisconsin Department of Natural Resources.
- F. The Contractor shall provide adequate job site storage for all coating materials, thinners, rags and waste materials, per the manufacturers shipping and storage requirements, state and local regulations, the Engineer's specifications, or as directed by the Engineer. Adequate job site storage facilities shall be defined as any temporary job site trailer, building or enclosed van providing shelter and temperature protection to stored coating materials, thinners and solvents which meet state and local regulations.

1.12 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- C. Unfavorable Weather Conditions

1. No surface preparation or coating application work shall be done under unfavorable weather conditions, unless the work is adequately protected, and then only with the specific approval of the Engineer.
2. Engineer intends to monitor wind direction, wind speed, air temperature, steel temperature, dewpoint and relative humidity to ensure Contractors' compliance with the listed conditions.
3. The Contractor shall record the wind direction, winds speed, dewpoint, relative humidity, air temperature, and surface temperature a minimum of three (3) times per day for each day of the Construction Schedule or each day the Contractor is on site performing the work. The daily log shall be submitted to the Engineer or Engineer's representative for comparison with the Contractor's data and verification of compliance.
4. Contractor shall use all procedures necessary to ensure project completion within the allotted time period. This specifically includes heating, dehumidification, or other forced curing methods, as necessary, and approved by the engineer. These items are specifically included in the Contract Price, and their use alone shall not be cause for a change order. Prior to utilization of these methods, Contractor shall submit specific procedures to be utilized for approval in accordance with the specifications.

D. Areas to Protect

1. Care must be taken when performing abrasive blasting and painting so that adjacent areas are not damaged by these operations. Protect during blasting operations and do not coat over: vent or overflow screens, ladder safety equipment devices, interior or exterior lighting, switches or outlets, aviation warning obstruction lights or their photoelectric cell switches, control boxes, whether electrical, electronic, or mechanical, or miscellaneous antenna equipment. Provide sufficient protection and control measures to prevent damage to these or other peripheral equipment which requires protection. Temporarily remove the ladder safety climb equipment for abrasive blasting and coating operations. Install ladder safety climb devices after approval of the coatings by the Engineer.
2. The entrance of dirt, sediment, blast media, and other debris into the inlet/outlet pipe, as well as the entrance of residual water into the tank area from a faulty valve is to be prevented. To prevent this and protect the piping, the Contractor shall, prior to any surface preparation work, insert into the inlet/outlet pipe a heavy duty, inflatable flex-plug, such as those manufactured by Peterson Products Company of Fredonia, WI or rubber plugs such as those manufactured by Vanderlans and Sons, Inc. of Lodi, CA.

E. Protection:

1. Cover miscellaneous tank openings, except as required for ventilation, to avoid accumulation of cleaning residue and paint material in overflows and inlet and outlet piping.
2. Exterior Tank: Cover tank vents without sealing tight to prevent contamination of tank interior. Maintain ventilation of tank interior to avoid structural damage.

3. Protect equipment from abrasion and paint damage.
 4. Cleaning and painting tank exterior after the tank is filled is not permitted.
- F. Tank Interior Work:
1. Ventilate tank interior to remove dust, fumes, and volatile gases as required by authorities having jurisdiction.
 2. Provide adequate lighting level for ability to perform and inspect Work.
 3. Keep manholes and other vent openings open during cleaning, surface preparation, painting and curing operations.
 4. Provide Engineer and laboratory personnel required to enter tank during cleaning or painting operations with safety equipment required by authority having jurisdiction.
- G. Protect surfaces from rapid curing caused by wind or sun exposure.
- H. Prevent rapid changes in temperature during curing and thermal shock cracks in finish material.

1.13 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Product Warranties.
- B. Furnish five (5) year manufacturer warranty for paints. Warrant all application and workmanship for a period of one (1) year from completion. If any failures occur, the contractor shall remedy at his/her own expense.

PART 2 PRODUCTS

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 Interior Area Wet Coating

- A. The tank interior area shall be coated with products manufactured by Tnemec Company, Inc. or approved equal as outlined below to holiday free surface.
1. Tnemec Company, Inc.
 - a. Tnemec Zinc Rich Urethane and Epoxy Coating.

- b. Primer: Tnemec Hydro-Zinc Series 91-H2O, 2.5-3.5 mils dry film thickness. The DFT of the primer at any individual spot measurement location shall be 2.5 mils minimum.
- c. Intermediate: Tnemec Pota-Pox Plus Series N140, 4.0-6.0 mils dry film thickness. The DFT of the primer plus intermediate at any individual spot measurement location shall be 6.5 mils minimum.
- d. Finish: Tnemec Pota-Pox Plus Series N140, 4.0-6.0 mils dry film thickness.
- e. The total dry film thickness including the primer, intermediate, and finish coats shall be 10.5 mils minimum – 15.5 mils with average of 13.0 mils. The minimum dry film thickness of the coating system at any individual spot location shall be 10.5 mils.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.

3.2 PREPARATION

- A. Remove all surface contaminants in accordance with SSPC-SP 1, Solvent Cleaning. Abrasive blast entire interior to a NACE No. 2/SSPC-SP 10 Near White Metal Blast Cleaning.
- B. Apply a zinc/epoxy coating system as specified.
- C. Apply by brush one (1) additional stripe coat to ensure uniformity is thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, and other irregularities in the surface. This additional coat shall be applied after proper cure and approval of the intermediate coat and shall consist of color variation. i.e. this coat will typically be the finish coat color.
- D. Perform low voltage wet sponge testing of all areas above and below the High-Water Level (HWL) to ensure the coating in this area meets NACE Condition "A" Pinhole Free. The applied coating film shall be continuous.

- E. Clean up and sterilize tank as specified. The Contractor shall be fully responsible for proper testing, waste evaluation, waste tracking, documentation and disposal of interior waste generated per federal (RCRA/EPA) and State of Wisconsin, Pollution Control Agency Regulations and the Specifications.

3.3 BLAST CLEANING

- A. Use proper equipment and abrasives when blast cleaning to produce the mil profile, within the range of 2.0 to 3.5 or as recommended by the coating manufacturer. Do not reuse sand or flint abrasives.
- B. The abrasive used shall be of the type that is graded as to proper size, shape, and hardness. It shall be free of contaminants and shall not embed itself in the blasted surface. Silica sand, Flint, Garnet, or Quartz type abrasives shall be chemically washed, dried, dust, dirt, and fines free, resistant to fracture (shattering), and contain no leachable contaminants. Synthetic (non-metallic and non-siliceous) abrasives such as Silicon Carbide, Aluminum Oxide and Refractory Slag products shall meet the above criteria. The use of reduced or dust free abrasive blasting is required. The use of a proprietary admixture to the selected abrasive such as "Blastox"™ is optional to ensure satisfactory toxicity characteristics testing. Prior to start-up of the project, samples of the Contractor's selected abrasive and/or abrasive/admixture shall be submitted to the Engineer for testing and approval. Random field testing of the abrasive shall be done, as directed by the Engineer to ensure the abrasive used complies with these requirements.
- C. The use of recyclable abrasive, such as steel grit, is neither specifically encouraged nor prohibited. Contractor's requesting the use of recyclable abrasive must comply with the specified mil profile. Waste generated by this method of abrasive blasting may be considered **Hazardous Waste** and as such must be disposed of accordingly.
- D. Additional care is required during cleanup to ensure all abrasive residual is removed prior to coating application. All compressed air supply shall be properly equipped with suitable after coolers, oil, and moisture separators to prevent contamination of abrasives and/or blasted surfaces. These separators shall be of the continuous bleeding or automatic dumping type. In order to prevent contamination of abrasives and/or blasted surfaces, it is recommended that the separators be installed between the compressor air outlet and the blasting pot compressed air inlet.
- E. Stop abrasive blast cleaning in sufficient time to remove all dust, spent abrasive and other foreign matter from and around all blasted surfaces (including rigging and equipment) and to allow the atmosphere to clear before any coating is done. Removal of these materials shall be by clean brush or suitable industrial vacuum with particular attention given to welds, pockets, poorly accessible areas or any overhead areas.
- F. Apply the first coat to all prepared surfaces, except that there shall remain uncoated a 3-inch to 4-inch border of blasted steel at the end of each workday. When blast cleaning

resumes the following workday, this border shall be re-blasted up to and including 1 inch to 3 inches of the previous primer coating.

- G. Take extra care during all blasting operations, to prevent damage or abrasive impingement upon previously applied-coated areas.
- H. A prime coat shall be applied within eight (8) hours after sandblasting. When the humidity exceeds 80%, the prime coat shall be applied within four (4) hours after sandblasting. If conditions are questionable, the Engineer shall make the decision, and the Contractor shall accept his interpretation as final and binding. See paragraph 3.01.B (Workmanship) for additional temperature and humidity limitations.
- I. A daily inspection of the separators and compressed air supply will be required to ensure cleanliness of all compressed air supplied for abrasive blasting. This test will be performed by a blotter test. A clean white Blotter is held, no more than 18 inches, from the air supply, downstream of moisture and oil separators. The air supply is directed at the Blotter for approximately (2) two minutes. The Blotter is then examined visually for signs of oil and moisture. A clean blotter at test completion means a successful passing of the air supply test. Failure to pass the compressed air test will be justification for rejection of abrasive blasting performed that day. The Engineers discretion will be final in this determination.

3.4 APPLICATION AND MATERIALS

- A. Apply paint in accordance with manufacturer's instructions and SSPC PA 1.
- B. The Water Utility shall be responsible for draining the reservoir.
- C. All work of this Contract shall be done in a competent manner, by skilled personnel experienced in the particular type of work being performed. The coating shall be performed in a manner satisfactory to the Engineer and using approved methods, acceptable tools, and practices.
- D. Proceed with surface preparation and coating application only when air and surface temperatures are above the manufacturers recommended minimum surface temperature and below 100 degrees F, and surface temperature is at least 5 degrees above wet bulb air temperature reading. Coating shall not be applied to dust, wet or damp surfaces, and shall not be applied in rain, snow, fog, or mist, or when relative humidity exceeds 85 percent. No coating shall be applied when it is expected that the relative humidity will exceed 85 percent or when the air temperature will drop below 40 degrees F within 8 hours after the application of the coating. If working conditions are questionable, the Engineer shall make the decision and the Contractor shall accept Engineer's interpretation as final and binding.
- E. Each coat shall be applied at the specified rate and in the manner recommended by the coating manufacturer and it shall be well worked into the surface to which applied. No

laps or brush marks shall show, and primer shall be applied to produce as uniform a coating thickness and complete coverage as is possible. Exterior primer coatings shall be inspected and approved by the Owner's representative, Engineer, or inspector within 24-hours after application to ensure a holiday free coat of primer. The film thickness of the coatings will be measured and any readings below the specified film thickness, or holidays shall be corrected by applying an additional coat(s). Where thinning is necessary, only the products of the manufacturer furnishing the coating, and for that particular purpose, shall be allowed. All thinning shall be done strictly in accordance with the manufacturer's instructions, as well as with the full knowledge and approval of the Engineer. Dry film thickness will be measured by means of the "Mikrotest" gage manufactured by the Nordstrom Corporation of Amherst, Ohio or equivalent; and measurements of wet mil thickness' will be accomplished by use of the "Nordson" wet film gage or such other gage as the Engineer might determine as being satisfactory.

- F. Care shall be given to ensure one additional and uniform stripe coat of intermediate coat is carefully applied by brushing around rivet heads, weld seams, scab marks, plate overlap, joints, and other irregularities in the surface. Each coat shall be allowed to dry and/or cure thoroughly before either the next coat is applied, or the tank is placed into service as required by the coating manufacturer's written recommendations. Stripe coating shall be applied prior to the application of the full finish coat.
- G. If the coating is applied by spraying, use suitable nozzles to provide an adequate supply of air within the proper pressure range to the liquid in the container and to the atomizing nozzle, all as recommended by the coating and equipment manufacturers as being best suited or necessary for the production of good work. All necessary precautions must be taken to avoid spray fallout on and the consequent damage to any works, improvements or properties either of the Owner or of other parties, wherever located. The Contractor shall be responsible for all damage resulting from drifting of the spray.
- H. Exterior spray painting shall be permitted, but only within the containment. In addition to the containment, the Contractor shall take any and all necessary precautions to avoid paint fallout on the consequent damage to any works, improvements or properties either of the Owner or of other parties, wherever located. The Contractor shall be responsible for all damage resulting from drifting of the paint.
- I. If applied by brushing, the coating shall be brushed on in one direction, and then smoothed in a direction at right angles thereto, so as to produce as uniform thickness of coating and as complete a coverage as possible. Such two-directional brushing shall be considered as "one coat" within the meaning of these specifications.
- J. Application of the primer or intermediate coats to the interior tank structural, including "I" beams, compression ring(s), support column(s), attachment brackets, nut/bolt assemblies and roof plate overlap seams shall be by brush or brush/spray application to ensure a uniform coat of primer thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, beam flanges and irregularities in the surface.

This application does not constitute the specified "stripe coat". No interior wet coating shall be applied by roller application that sheds any roller hairs into the coating.

- K. Finish coat shall be uniform in color and sheen without streaks, laps, runs, sags or missed areas. Exterior finish coat shall be applied by brush or roller only.
- L. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- M. Interior Wet - The Contractor shall clean the tank of all sediment, mud, debris, and any small amount of water remaining after draining. All paint systems and application procedures shall be consistent with current AWWA Standard D102 and be approved by the Wisconsin Department of Natural Resources (DNR)

3.5 CLEANUP AND STERILIZATION

- A. On completion of the work on the interior of the tank, the Contractor shall remove all dirt, litter, and leave all surfaces in reasonably clean condition, scrubbing the same with water and approved soap or other cleaning agent. Cleaning and rinsing shall be performed by a Contractor provided power or jet truck using a minimum 2-inch diameter sanitary hose. When this has been completed, inspected, and approved by the Owner or Engineer, the final sterilization of said interior will be done by the Contractor at no cost to the Owner.
- B. The Contractor shall, at all times, keep the premises free from accumulations of waste material or rubbish caused by his employees or work. He shall clean-up abrasive material or rubbish on a daily regular schedule as directed by the Engineer. All unneeded construction equipment shall be removed from the site and all damages, repaired expeditiously so that the adjacent property is inconvenienced as little as possible.
- C. During exterior sandblasting and coating operations, the Contractor shall provide adequate protection and containment to prevent damage to adjacent structures and property by his operations. The Contractor shall also perform intermittent or periodic clean-up of adjacent grounds to prevent the accumulation of sandblast sand and debris caused by his operations. This shall include but not be limited to, sidewalks, streets, driveways, yards, and rooftops.
- D. The Contractor shall be fully responsible to recover, remove and dispose of properly all spent abrasives, removed coating and paint, spent solvents, paint containers and other non-specific waste in accordance with current State and Federal regulation included but not limited to the 1976 Resource, Conservation and Recovery Act (RCRA) and its amendments, specifically the 1984 Hazardous and Solid Waste Amendments to RCRA. Disposal of "empty containers" shall be in accordance with RCRA 40 CFR 261.7 and Wisconsin State Regulations. **In addition, the contractor shall submit for review and**

approval his Toxicity Characteristic Leaching Procedure (TCLP) sampling plan. The Sampling Plan and quality control measures must be in conformance with current EPA Test Procedures and current State of Wisconsin, Pollution Control Agency Requirements. Proper documentation of this process is required by EPA and this specification. The Contractor is also responsible to provide proper documentation per RCRA/EPA and State regulations for identifying, tracking and disposal of the waste generated. At a minimum, this documentation shall include a Waste Evaluation Form, Industrial Solid Waste Tracking Form, Landfill Special Waste Tracking Form, and letter of acceptance of the waste by the appropriate landfill or disposal site.

- E. Under this Agreement, the Contractor shall be responsible for compliance with local, state, and federal regulations concerning emissions or disposal of solid, particulate, liquid, or gaseous matter as a result of the cleaning, painting or other operations. Compliance with this provision shall be accomplished without direct supervision from the Engineer or Owner. The Owner shall not grant additional compensation for changes in the law, regulations, or interpretations of said laws or regulations. The burning of trash, paper or wood on the job site is not permitted. Unless otherwise provided by these specifications, the Contractor is responsible for all containing, shielding, waste retrieval or other precautions required by any regulatory agency at no additional cost to the Owner. **Any fines imposed on the Owner or Engineer by any regulatory agency because of the contractor's non-compliance with Environmental Regulations shall be paid or reimbursed by the contractor.**
- F. The Contractor shall perform timely laboratory testing of waste materials generated on the job site to determine its specific classification for proper disposal in accordance with this specification and all applicable state and federal regulations. A minimum of four (4) TCLP tests shall be performed or as required by regulations on both the interior and exterior waste materials. TCLP testing shall be for all eight (8) specific constituent concentrations (eight (8) heavy metals/inorganics) as shown in 40 CFR 261.24, Table 1 or as amended by regulation.
- G. The Owner intends to perform timely laboratory testing of waste materials to verify test results taken by the Contractor. In the event of discrepancies in test results and the resultant classification of waste materials, it is agreed by the parties to this Contract that the Engineer shall perform independent testing and shall determine all questions in relation to the classification of waste materials. **The Contractor will be held liable for all supplementary testing, Engineering and associated Contract Administration cost.**
- H. On or before the completion of work, the Contractor shall, unless otherwise directed in writing, remove all temporary works, tools and machinery or other construction equipment placed by him. He shall remove all rubbish from any grounds that he has occupied and shall leave all of the premises and adjacent property affected by the operation in a neat and restored condition satisfactory to the Engineer. Restoration of grass areas shall be by the placement of black soils suitable for the growing of grass and seeded to the Owners satisfaction.

3.6 VENTILATION AND SAFETY REQUIREMENTS

- A. The Contractor shall maintain adequate and continuous explosion-proof ventilation during surface preparation, coating operations and recoat and curing periods. This ventilation shall be of the suction type, installed on the roof ventilation manways or roof openings and shall be of sufficient capacity to maintain throughout the tank interior a clear atmosphere that is well below explosive and toxic limits. All ventilation shall be in compliance with OSHA and the Wisconsin Department of Labor and Industry for Confined Spaces Entry.
- B. Ventilation of the interior shall be performed by the use of dust collectors at manways and ventilation openings. Alternatively, ventilation fans may be used, with the Engineer's approval, at roof manways and ventilation openings if they have a minimum free air capacity of 6200 CFM and include dust socks to prevent the escape and drift of dust generated by interior abrasive blasting. The use of pneumatic copious air movers is not permitted.
- C. Arrange the ventilation system, including all fans and temporary ductwork, so that fresh air is drawn into the tank at the bottom and is exhausted at the top with an upward air movement pattern within the tank that permits no still air spaces to exist in any area. Give particular attention to floor level or lower spaces and pocket areas where heavier-than-air solvents and particulate matter are likely to accumulate. Said ventilation shall be sufficient for the removal of dust, coating fumes or other volatile gases and moisture to such an extent as to prevent any undesirable accumulation of any thereof to the hazard of the workers or the work.
- D. All electrical equipment, tools, and ventilation fans shall be explosion-proof and/or non-sparking and shall be maintained in good working order. Spray equipment shall be as recommended by, or acceptable to the coating's manufacturer, and shall be thoroughly cleaned before and after use with the appropriate cleaning solvents.
- E. Contractor shall provide adequate explosion-proof lighting during all surface preparation, coating operations, and inspection. This lighting shall comply with SSPC Technology Guide No. 12. Surface preparation and coating application require a minimum of 20-foot candles and recommends 50-foot candles. The same guide states inspection work requires a minimum of 50-foot candles and recommends 200-foot candles.
- F. In the event heating devices are used, they shall be explosion-proof and of the type that do not exhaust sooty or oily residues or any other contaminants into the tank. Only indirect heat heating units can be used which will not cause the products of combustion to condense.
- G. Prior to use, store all coating materials in a secure area that shall provide protection from weather and temperature beyond manufacturers requirements. The area shall be

maintained in a safe, neat, and clean manner and free from fire, explosion, or other hazards.

- H. All work shall be performed in a safe and orderly manner, all in compliance with the standards as prescribed by OSHA and the Wisconsin Department of Labor and Industry, Division of Accident Prevention. The Contractor is directed to the Supplemental Conditions Section for the full scope of regulatory requirements. The CONTRACTOR will be required to comply with OSHA Regulations 5205.1000-5205.1040 and 5067.0300 for Confined Space Entry. Compliance with Confined Space Entry includes daily monitoring the confined space for four (4) gases and the daily confined space entry log. This daily confined space entry monitoring shall be for OSHA compliance for not only the contractor or subcontractor forces but shall also include monitoring for representatives from the Owner and Engineer. **Any fines imposed on the Owner or Engineer by any regulatory agency because of the contractor's non-compliance with OSHA Regulations shall be paid or reimbursed by the contractor.** The contractor will be required to comply with OSHA Regulations 29 CFR 1926.62 Lead for worker health. Management and supervisory personnel shall be responsible for employee training and compliance with this policy.
- I. The use of rope rigging where welding procedures are performed is not permitted.
- J. The contractor shall be responsible to secure all tank openings at the end of each day or at any time, he has temporarily left the job site. In place of manway covers the contractor may use adequately secured and locked grating type covers to secure all openings. Gratings used for ventilation purposes shall be of at least ¼-inch diameter wire mesh with minimum two (2) square inch mesh openings to allow adequate air passage.

3.7 SUPERINTENDENT

- A. The Contractor shall keep on this job a competent superintendent or crew foreman who shall be familiar with all phases of the work. The superintendent or crew foreman shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.
- B. The Contractor's superintendent shall have the experience, knowledge, and communication skills to receive guidance and direction from the Contractor at the jobsite and communicate that guidance to the workers.
- C. The superintendent or crew foreman shall be responsible to perform initial quality control inspection of the crew's workmanship for compliance with the specifications. When the work or materials are ready for inspection by the Owner's or Engineer's representative or inspector the superintendent or crew foreman shall give appropriate notice to the inspector.

- D. The contractor shall be responsible to perform initial testing to the interior wet coating below and above the HWL to ensure a holiday free surface.

3.8 INSPECTION OF WORK

- A. The Owner's personnel and the inspector shall at all times have access to the work, and the Contractor shall provide proper facilities for such access and inspection.
- B. The Engineer reserves the right to inspect the work at any time for compliance with all requirements of the specifications.
- C. The Engineer reserves the right to approve each phase of the work before further work may be done, to halt all work deemed to be improper or not in compliance with the specifications, and to require the Contractor to promptly correct all improper practices or deficient work.
- D. Inspections may include wet and/or dry film thickness gauging, visual surface inspection by the naked eye and/or a suitable magnifying instrument to detect runs, sags, drips, cracks, or other defects in the coating system.
- E. Inspections may also include any other examination of the prepared surfaces or coating system, deemed necessary by the Engineer, including random destructive film thickness and coating adhesion checks. The entire interior wet area of the tank shall be tested and inspected by the Engineer to ensure a holiday free surface. Interior wet area of the tank shall be tested and inspected by the Engineer to ensure that the coating has cured in accordance with the manufacturer's recommendations.
- F. Dry film thickness (DFT) readings of the coating are taken to provide reasonable assurance that the specified minimum DFT has been achieved. A minimum of five (5) separate spot measurements shall be made over every 100 square feet in area. Each spot measurement shall consist of an average of three (3) gage readings next to each other no further than six (6) inches apart. Each Spot measurement must be within the specified minimum thickness. The single gage readings, however, making up the spot measurement are permitted to be no less than 80% of the specified minimum thickness.
- G. The Contractor shall provide all necessary inspection equipment (at the discretion of the Engineer), labor, rigging, lighting and other equipment to facilitate this inspection.
- H. Contractor shall perform their own quality control / quality assurance prior to the Owner or Engineer / Inspector performing inspections.
- I. Any expenses incurred for corrective measures required as the result of improper practices and/or defective or deficient work shall be borne by the Contractor and the extent of these corrective measures shall be at the discretion of the Engineer. This includes costs for the Engineer to perform repeated and excessive re-inspection of defective or deficient work performed by the Contractor.

- J. Such inspection shall not relieve the Contractor from any obligation to construct the work strictly in accordance with the plans and specifications. Work not so constructed shall be removed and replaced by the Contractor at his own expense.

3.9 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Notify Engineer, minimum two days in advance, to permit observation of cleaned surfaces prior to application of each coat of paint prior to subsequent paint applications.
- C. Perform a wet mill thickness test.
- D. The Utility and/or its representatives may, at any time, inspect job progress, surface preparation, paint application, mil thickness, anchor pattern, substrate cleanliness, material, etc. If any deficiency is found, the Contractor shall remedy at his/her own expense. Any re-work shall not affect completion time.

3.10 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Collect waste material capable of constituting fire hazard, place in closed metal containers, and remove daily from site.
- C. Remove scaffolding, ladders, or other facilities at completion of work.
- D. Remove temporary heating and ventilating facilities.

END OF SECTION 099713

SECTION 099714 - INTERIOR DRY AREA SPOT REPAIR AND COATING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Painting tank interior dry area.
- C. Related Sections:
 - 1. Section 099713 – Interior Wet Area Abrasive Blast and Coating.
 - 2. Section 099715 – Exterior Area Abrasive Blast and Coating.
 - 3. Section 330110 - Water Tank Disinfection.
 - 4. Section 331617 - Water Storage Tank – Structural Modifications & Repairs.
 - 5. Appendix A – Elevated Water Tank Inspection Report

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Interior Dry Area Spot Repair and Coating:
 - 1. Basis of Measurement: By Lump Sum.
 - 2. Basis of Payment: Includes sandblasting; cleaning; all proper surface preparation for repainting; testing; DNR approval; all coats of required painting; temporary and permanent removals; disposal of spent abrasive and garbage; disinfection; and all materials, equipment, tools, machinery, labor, and construction means and methods necessary to complete the Interior Dry Area Spot Repairs and Coating in place and ready for use.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 - 3. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test.
- B. American Water Works Association:
 - 1. AWWA D102 - Standard for Coating Steel Water Storage Tanks.
- C. NSF International:
 - 1. NSF 61 - Drinking Water System Components - Health Effects.
- D. SSPC: The Society for Protective Coatings:
 - 1. SSPC PA 1 - Shop, Field, and Maintenance Painting of Steel.
 - 2. SSPC SP 6 - Commercial Blast Cleaning.

3. SSPC SP 10 - Near-White Blast Cleaning.
- E. Wisconsin Department of Natural Resources Administrative Code
1. Section NR 811

1.4 PERFORMANCE REQUIREMENTS

- A. Exterior Paint Performance Test Requirements:
1. Exterior Exposure:
 - a. Method: Paint system applied to sandblasted steel panels, cured for a minimum of 7 days at 77 degrees F (25 degrees C) and exposed at 45 degrees facing South.
 - b. Performance Requirements: No blistering, cracking or delamination of film; not less than 85 percent gloss after 18 months exposure.
 2. Hardness:
 - a. Method: ASTM D3363.
 - b. Requirements: Minimum 6H.
 3. Humidity:
 - a. Method: ASTM D2247.
 - b. Requirements: No blistering, cracking, softening or delamination of film after 5,000 hours exposure.

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on finishing products.
- C. Samples:
 1. Submit two paper chip samples illustrating range of colors and textures available for each surface finishing product scheduled.
- D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

1.6 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted surfaces.

1.7 QUALITY ASSURANCE

- A. Paint:
 - 1. Comply with AWWA D102.
 - 2. Certified by NSF International in accordance with NSF 61, as acceptable for surfaces in contact with potable water.
- B. Obtain paint products from single source for Work specified in this section.
- C. Perform Work in accordance with the Wisconsin Department of Natural Resources Code, Section NR 811.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five (5) years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum five (5) years documented experience and having completed ten or more projects of similar size and scope of Work to the satisfaction and approval of the Owner.

1.9 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.11 COATING AND COATING PRODUCTS

- A. The coating and coating products used to complete the project shall be specified in the Bid Item Descriptions or an approved equal. The products of other manufactures comparable in quality and type will be acceptable if the following conditions are met:
 - 1. Satisfactory data is submitted on past performance of the product on other water storage tanks.
 - 2. The product complies with State of Wisconsin Health Department Standards.
 - 3. The Engineer approves the product.
 - 4. No request for substitution shall be considered unless prior written approval has been obtained seven (7) days prior to the bid opening.
- B. All materials shall be brought to the job site in the original sealed and labeled containers of the coating manufacturer and shall be subject to inspection by the Engineer.
- C. The Contractor shall submit to the Engineer, immediately upon completion of the job, Certification from the manufacturer indicating the quantity of each coating purchased. Such Certification shall refer to the square footage figures provided to the manufacturer and the Engineer by the Contractor.
- D. All coating ingredients shall conform to current applicable specifications of the American Society for Testing and Materials. No coating materials shall be reduced or thinned except as specified or recommended by the manufacturer of the coating. The coatings shall be thoroughly mixed and kept thoroughly stirred during application, when applicable.
- E. All coating for the interior surfaces that will or may be exposed to the storage water shall be a tasteless and nonpoisonous product designed for such usage and approved by the Wisconsin Department of Natural Resources.
- F. The Contractor shall provide adequate job site storage for all coating materials, thinners, rags and waste materials, per the manufacturers shipping and storage requirements, state and local regulations, the Engineer's specifications, or as directed by the Engineer. Adequate job site storage facilities shall be defined as any temporary job site trailer, building or enclosed van providing shelter and temperature protection to stored coating materials, thinners and solvents which meet state and local regulations.

1.12 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- C. Unfavorable Weather Conditions

1. No surface preparation or coating application work shall be done under unfavorable weather conditions, unless the work is adequately protected, and then only with the specific approval of the Engineer.
2. Engineer intends to monitor wind direction, wind speed, air temperature, steel temperature, dewpoint and relative humidity to ensure Contractors' compliance with the listed conditions.
3. The Contractor shall record the wind direction, winds speed, dewpoint, relative humidity, air temperature, and surface temperature a minimum of three (3) times per day for each day of the Construction Schedule or each day the Contractor is on site performing the work. The daily log shall be submitted to the Engineer or Engineer's representative for comparison with the Contractor's data and verification of compliance.
4. Contractor shall use all procedures necessary to ensure project completion within the allotted time period. This specifically includes heating, dehumidification, or other forced curing methods, as necessary, and approved by the engineer. These items are specifically included in the Contract Price, and their use alone shall not be cause for a change order. Prior to utilization of these methods, Contractor shall submit specific procedures to be utilized for approval in accordance with the specifications.

D. Areas to Protect

1. Care must be taken when performing abrasive blasting and painting so that adjacent areas are not damaged by these operations. Protect during blasting operations and do not coat over: vent or overflow screens, ladder safety equipment devices, interior or exterior lighting, switches or outlets, aviation warning obstruction lights or their photoelectric cell switches, control boxes, whether electrical, electronic, or mechanical, or miscellaneous antenna equipment. Provide sufficient protection and control measures to prevent damage to these or other peripheral equipment which requires protection. Temporarily remove the ladder safety climb equipment for abrasive blasting and coating operations. Install ladder safety climb devices after approval of the coatings by the Engineer.
2. The entrance of dirt, sediment, blast media, and other debris into the inlet/outlet pipe, as well as the entrance of residual water into the tank area from a faulty valve is to be prevented. To prevent this and protect the piping, the Contractor shall, prior to any surface preparation work, insert into the inlet/outlet pipe a heavy duty, inflatable flex-plug, such as those manufactured by Peterson Products Company of Fredonia, WI or rubber plugs such as those manufactured by Vanderlans and Sons, Inc. of Lodi, CA.

E. Protection:

1. Cover miscellaneous tank openings, except as required for ventilation, to avoid accumulation of cleaning residue and paint material in overflows and inlet and outlet piping.
2. Exterior Tank: Cover tank vents without sealing tight to prevent contamination of tank interior. Maintain ventilation of tank interior to avoid structural damage.

3. Protect equipment from abrasion and paint damage.
4. Cleaning and painting tank exterior after tank is filled is not permitted.

F. Tank Interior Work:

1. Ventilate tank interior to remove dust, fumes, and volatile gases as required by authorities having jurisdiction.
2. Provide adequate lighting level for ability to perform and inspect Work.
3. Keep manholes and other vent openings open during cleaning, surface preparation, painting and curing operations.
4. Provide Engineer and laboratory personnel required to enter tank during cleaning or painting operations with safety equipment required by authority having jurisdiction.

G. Protect surfaces from rapid curing caused by wind or sun exposure.

H. Prevent rapid changes in temperature during curing and thermal shock cracks in finish material.

1.13 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Product Warranties.
- B. Furnish five (5) year manufacturer warranty for paints. Warrant all application and workmanship for a period of one year from completion. If any failures occur, the contractor shall remedy at his/her own expense.

PART 2 PRODUCTS

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 Interior Area Dry Coating

- A. The tank interior area shall be coated with products manufactured by Tnemec Company, Inc. or approved equal as outlined below to holiday free surface.
 1. Tnemec Company, Inc.
 - a. Tnemec Zinc Rich Urethane and Epoxy Coating

- b. Primer: Tnemec Hydro-Zinc Series 91-H2O, 2.5 – 3.5 mils dry film thickness. The DFT of the primer at any individual spot measurement location shall be 2.5 mils minimum.
- c. Intermediate: Tnemec Pota-Pox Plus Series N140, 4.0 – 6.0 mils dry film thickness. The DFT of the primer plus intermediate at any individual spot measurement location shall be 6.5 mils minimum.
- d. Finish: Tnemec Pota-Pox Plus Series N140, 4.0 – 6.0 mils dry film thickness.
- e. The total dry film thickness including the primer, intermediate and finish coats shall be 10.5 mils minimum – 15.5 mils with an average of 13.0 mils. The minimum dry film thickness of the coating system at any individual spot location shall be 10.5 mils.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.

3.2 PREPARATION

- A. Remove all surface contaminants in accordance with SSPC-SP 1 Solvent Cleaning. After structural repairs are completed, all the reservoir surfaces at areas of structural repairs and coating failures shall be spot abrasive blasted per NACE No. 3/SSPC-SP 6 Commercial Blast Cleaning and coated with a zinc/epoxy system as specified in Article 7. Feather edges of existing coating, at spot blasted areas, using SSPC-SP 3 Power Tool Cleaning methods. This includes the entire exterior of the bowl, entire access tube interior, all accompanying items in the drywell tube, i.e. overflow pipe, ladder, brackets, etc., two (2) platforms, top six (6) inches of the pedestal, and other random coating failures as directed by the Engineer.
- B. For bidding purposes, it is estimated that there are approximately **3,000** square feet of area to repair. This work will be monitored and verified by the Engineer in the field. Increases or decreases in the amount of the work, and the appropriate contract price adjustments, will be made per requirements of the General Conditions.

- C. Apply a zinc/epoxy coating system as specified.
- D. Apply by brush one (1) additional stripe coat to ensure uniformity is thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, and other irregularities in the surface. This additional coat shall be applied after proper cure and approval of the intermediate coat and shall consist of color variation. i.e. this coat will typically be the finish coat color.
- E. Clean up tank as specified. The Contractor shall be fully responsible for proper testing, waste evaluation, waste tracking, documentation and disposal of interior waste generated per federal (RCRA/EPA) and State of Minnesota, Pollution Control Agency Regulations, and the Specifications

3.3 BLAST CLEANING

- A. Use proper equipment and abrasives when blast cleaning to produce the mil profile, within the range of 2.0 to 3.5 or as recommended by the coating manufacturer. Do not reuse sand or flint abrasives.
- B. The abrasive used shall be of the type that is graded as to proper size, shape, and hardness. It shall be free of contaminants and shall not embed itself in the blasted surface. Silica sand, Flint, Garnet, or Quartz type abrasives shall be chemically washed, dried, dust, dirt, and fines free, resistant to fracture (shattering), and contain no leachable contaminants. Synthetic (non-metallic and non-siliceous) abrasives such as Silicon Carbide, Aluminum Oxide and Refractory Slag products shall meet the above criteria. The use of reduced or dust free abrasive blasting is required. The use of a proprietary admixture to the selected abrasive such as "Blastox"™ is optional to ensure satisfactory toxicity characteristics testing. Prior to start-up of the project, samples of the Contractor's selected abrasive and/or abrasive/admixture shall be submitted to the Engineer for testing and approval. Random field testing of the abrasive shall be done, as directed by the Engineer to ensure the abrasive used complies with these requirements.
- C. The use of recyclable abrasive, such as steel grit, is neither specifically encouraged nor prohibited. Contractor's requesting the use of recyclable abrasive must comply with the specified mil profile. Waste generated by this method of abrasive blasting may be considered **Hazardous Waste** and as such must be disposed of accordingly.
- D. Additional care is required during cleanup to ensure all abrasive residual is removed prior to coating application. All compressed air supply shall be properly equipped with suitable after coolers, oil, and moisture separators to prevent contamination of abrasives and/or blasted surfaces. These separators shall be of the continuous bleeding or automatic dumping type. In order to prevent contamination of abrasives and/or blasted surfaces, it is recommended that the separators be installed between the compressor air outlet and the blasting pot compressed air inlet.

- E. Stop abrasive blast cleaning in sufficient time to remove all dust, spent abrasive and other foreign matter from and around all blasted surfaces (including rigging and equipment) and to allow the atmosphere to clear before any coating is done. Removal of these materials shall be by clean brush or suitable industrial vacuum with particular attention given to welds, pockets, poorly accessible areas or any overhead areas.
- F. Apply the first coat to all prepared surfaces, except that there shall remain uncoated a 3-inch to 4-inch border of blasted steel at the end of each workday. When blast cleaning resumes the following workday, this border shall be re-blasted up to and including 1 inch to 3 inches of the previous primer coating.
- G. Take extra care during all blasting operations, to prevent damage or abrasive impingement upon previously applied-coated areas.
- H. A prime coat shall be applied within eight (8) hours after sandblasting. When the humidity exceeds 80%, the prime coat shall be applied within four (4) hours after sandblasting. If conditions are questionable, the Engineer shall make the decision, and the Contractor shall accept his interpretation as final and binding. See paragraph 3.01.B (Workmanship) for additional temperature and humidity limitations.
- I. A daily inspection of the separators and compressed air supply will be required to ensure cleanliness of all compressed air supplied for abrasive blasting. This test will be performed by a blotter test. A clean white Blotter is held, no more than 18 inches, from the air supply, downstream of moisture and oil separators. The air supply is directed at the Blotter for approximately (2) two minutes. The Blotter is then examined visually for signs of oil and moisture. A clean blotter at test completion means a successful passing of the air supply test. Failure to pass the compressed air test will be justification for rejection of abrasive blasting performed that day. The Engineers discretion will be final in this determination.

3.4 APPLICATION AND MATERIALS

- A. Apply paint in accordance with manufacturer's instructions and SSPC PA 1.
- B. The Water Utility shall be responsible for draining the reservoir.
- C. All work of this Contract shall be done in a competent manner, by skilled personnel experienced in the particular type of work being performed. The coating shall be performed in a manner satisfactory to the Engineer and using approved methods, acceptable tools, and practices.
- D. Proceed with surface preparation and coating application only when air and surface temperatures are above the manufacturers recommended minimum surface temperature and below 100 degrees F, and surface temperature is at least 5 degrees above wet bulb air temperature reading. Coating shall not be applied to dust, wet or damp surfaces, and shall not be applied in rain, snow, fog, or mist, or when relative

humidity exceeds 85 percent. No coating shall be applied when it is expected that the relative humidity will exceed 85 percent or when the air temperature will drop below 40 degrees F within 8 hours after the application of the coating. If working conditions are questionable, the Engineer shall make the decision and the Contractor shall accept Engineer's interpretation as final and binding.

- E. Each coat shall be applied at the specified rate and in the manner recommended by the coating manufacturer and it shall be well worked into the surface to which applied. No laps or brush marks shall show, and primer shall be applied to produce as uniform a coating thickness and complete coverage as is possible. Exterior primer coatings shall be inspected and approved by the Owner's representative, Engineer, or inspector within 24-hours after application to ensure a holiday free coat of primer. The film thickness of the coatings will be measured and any readings below the specified film thickness, or holidays shall be corrected by applying an additional coat(s). Where thinning is necessary, only the products of the manufacturer furnishing the coating, and for that particular purpose, shall be allowed. All thinning shall be done strictly in accordance with the manufacturer's instructions, as well as with the full knowledge and approval of the Engineer. Dry film thickness will be measured by means of the "Mikrotest" gage manufactured by the Nordstrom Corporation of Amherst, Ohio or equivalent; and measurements of wet mil thickness' will be accomplished by use of the "Nordson" wet film gage or such other gage as the Engineer might determine as being satisfactory.
- F. Care shall be given to ensure one additional and uniform stripe coat of intermediate coat is carefully applied by brushing around rivet heads, weld seams, scab marks, plate overlap, joints, and other irregularities in the surface. Each coat shall be allowed to dry and/or cure thoroughly before either the next coat is applied, or the tank is placed into service as required by the coating manufacturer's written recommendations. Stripe coating shall be applied prior to the application of the full finish coat.
- G. If the coating is applied by spraying, use suitable nozzles to provide an adequate supply of air within the proper pressure range to the liquid in the container and to the atomizing nozzle, all as recommended by the coating and equipment manufacturers as being best suited or necessary for the production of good work. All necessary precautions must be taken to avoid spray fallout on and the consequent damage to any works, improvements or properties either of the Owner or of other parties, wherever located. The Contractor shall be responsible for all damage resulting from drifting of the spray.
- H. Exterior spray painting shall be permitted, but only within the containment. In addition to the containment, the Contractor shall take any and all necessary precautions to avoid paint fallout on the consequent damage to any works, improvements or properties either of the Owner or of other parties, wherever located. The Contractor shall be responsible for all damage resulting from drifting of the paint.
- I. If applied by brushing, the coating shall be brushed on in one direction, and then smoothed in a direction at right angles thereto, so as to produce as uniform thickness of

coating and as complete a coverage as possible. Such two-directional brushing shall be considered as "one coat" within the meaning of these specifications.

- J. Application of the primer or intermediate coats to the interior tank structural, including "I" beams, compression ring(s), support column(s), attachment brackets, nut/bolt assemblies and roof plate overlap seams shall be by brush or brush/spray application to ensure a uniform coat of primer thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, beam flanges and irregularities in the surface. This application does not constitute the specified "stripe coat". No interior wet coating shall be applied by roller application that sheds any roller hairs into the coating.
- K. Finish coat shall be uniform in color and sheen without streaks, laps, runs, sags or missed areas. Exterior finish coat shall be applied by brush or roller only.
- L. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

3.5 CLEANUP AND STERILIZATION

- A. On completion of the work on the interior of the tank, the Contractor shall remove all dirt, litter, and leave all surfaces in reasonably clean condition, scrubbing the same with water and approved soap or other cleaning agent. Cleaning and rinsing shall be performed by a Contractor provided power or jet truck using a minimum 2-inch diameter sanitary hose. When this has been completed, inspected, and approved by the Owner or Engineer, the final sterilization of said interior will be done by the Contractor at no cost to the Owner.
- B. The Contractor shall, at all times, keep the premises free from accumulations of waste material or rubbish caused by his employees or work. He shall clean-up abrasive material or rubbish on a daily regular schedule as directed by the Engineer. All unneeded construction equipment shall be removed from the site and all damages, repaired expeditiously so that the adjacent property is inconvenienced as little as possible.
- C. During exterior sandblasting and coating operations, the Contractor shall provide adequate protection and containment to prevent damage to adjacent structures and property by his operations. The Contractor shall also perform intermittent or periodic clean-up of adjacent grounds to prevent the accumulation of sandblast sand and debris caused by his operations. This shall include but not be limited to, sidewalks, streets, driveways, yards, and rooftops.
- D. The Contractor shall be fully responsible to recover, remove and dispose of properly all spent abrasives, removed coating and paint, spent solvents, paint containers and other non-specific waste in accordance with current State and Federal regulation included but not limited to the 1976 Resource, Conservation and Recovery Act (RCRA) and its

amendments, specifically the 1984 Hazardous and Solid Waste Amendments to RCRA. Disposal of "empty containers" shall be in accordance with RCRA 40 CFR 261.7 and Wisconsin State Regulations. **In addition, the contractor shall submit for review and approval his Toxicity Characteristic Leaching Procedure (TCLP) sampling plan.** The Sampling Plan and quality control measures must be in conformance with current EPA Test Procedures and current State of Wisconsin, Pollution Control Agency Requirements. Proper documentation of this process is required by EPA and this specification. The Contractor is also responsible to provide proper documentation per RCRA/EPA and State regulations for identifying, tracking and disposal of the waste generated. At a minimum, this documentation shall include a Waste Evaluation Form, Industrial Solid Waste Tracking Form, Landfill Special Waste Tracking Form, and letter of acceptance of the waste by the appropriate landfill or disposal site.

- E. Under this Agreement, the Contractor shall be responsible for compliance with local, state, and federal regulations concerning emissions or disposal of solid, particulate, liquid, or gaseous matter as a result of the cleaning, painting or other operations. Compliance with this provision shall be accomplished without direct supervision from the Engineer or Owner. The Owner shall not grant additional compensation for changes in the law, regulations, or interpretations of said laws or regulations. The burning of trash, paper or wood on the job site is not permitted. Unless otherwise provided by these specifications, the Contractor is responsible for all containing, shielding, waste retrieval or other precautions required by any regulatory agency at no additional cost to the Owner. **Any fines imposed on the Owner or Engineer by any regulatory agency because of the contractor's non-compliance with Environmental Regulations shall be paid or reimbursed by the contractor.**
- F. The Contractor shall perform timely laboratory testing of waste materials generated on the job site to determine its specific classification for proper disposal in accordance with this specification and all applicable state and federal regulations. A minimum of four (4) TCLP tests shall be performed or as required by regulations on both the interior and exterior waste materials. TCLP testing shall be for all eight (8) specific constituent concentrations (eight (8) heavy metals/inorganics) as shown in 40 CFR 261.24, Table 1 or as amended by regulation.
- G. The Owner intends to perform timely laboratory testing of waste materials to verify test results taken by the Contractor. In the event of discrepancies in test results and the resultant classification of waste materials, it is agreed by the parties to this Contract that the Engineer shall perform independent testing and shall determine all questions in relation to the classification of waste materials. **The Contractor will be held liable for all supplementary testing, Engineering and associated Contract Administration cost.**
- H. On or before the completion of work, the Contractor shall, unless otherwise directed in writing, remove all temporary works, tools and machinery or other construction equipment placed by him. He shall remove all rubbish from any grounds that he has occupied and shall leave all of the premises and adjacent property affected by the operation in a neat and restored condition satisfactory to the Engineer. Restoration of

grass areas shall be by the placement of black soils suitable for the growing of grass and seeded to the Owners satisfaction.

3.6 VENTILATION AND SAFETY REQUIREMENTS

- A. The Contractor shall maintain adequate and continuous explosion-proof ventilation during surface preparation, coating operations and recoat and curing periods. This ventilation shall be of the suction type, installed on the roof ventilation manways or roof openings and shall be of sufficient capacity to maintain throughout the tank interior a clear atmosphere that is well below explosive and toxic limits. All ventilation shall be in compliance with OSHA and the Wisconsin Department of Labor and Industry for Confined Spaces Entry.
- B. Ventilation of the interior shall be performed by the use of dust collectors at manways and ventilation openings. Alternatively, ventilation fans may be used, with the Engineer's approval, at roof manways and ventilation openings if they have a minimum free air capacity of 6200 CFM and include dust socks to prevent the escape and drift of dust generated by interior abrasive blasting. The use of pneumatic copious air movers is not permitted.
- C. Arrange the ventilation system, including all fans and temporary ductwork, so that fresh air is drawn into the tank at the bottom and is exhausted at the top with an upward air movement pattern within the tank that permits no still air spaces to exist in any area. Give particular attention to floor level or lower spaces and pocket areas where heavier-than-air solvents and particulate matter are likely to accumulate. Said ventilation shall be sufficient for the removal of dust, coating fumes or other volatile gases and moisture to such an extent as to prevent any undesirable accumulation of any thereof to the hazard of the workers or the work.
- D. All electrical equipment, tools, and ventilation fans shall be explosion-proof and/or non-sparking and shall be maintained in good working order. Spray equipment shall be as recommended by, or acceptable to the coating's manufacturer, and shall be thoroughly cleaned before and after use with the appropriate cleaning solvents.
- E. Contractor shall provide adequate explosion-proof lighting during all surface preparation, coating operations, and inspection. This lighting shall comply with SSPC Technology Guide No. 12. Surface preparation and coating application require a minimum of 20-foot candles and recommends 50-foot candles. The same guide states inspection work requires a minimum of 50-foot candles and recommends 200-foot candles.
- F. In the event heating devices are used, they shall be explosion-proof and of the type that do not exhaust sooty or oily residues or any other contaminants into the tank. Only indirect heat heating units can be used which will not cause the products of combustion to condense.

- G. Prior to use, store all coating materials in a secure area that shall provide protection from weather and temperature beyond manufacturers requirements. The area shall be maintained in a safe, neat, and clean manner and free from fire, explosion, or other hazards.
- H. All work shall be performed in a safe and orderly manner, all in compliance with the standards as prescribed by OSHA and the Wisconsin Department of Labor and Industry, Division of Accident Prevention. The Contractor is directed to the Supplemental Conditions Section for the full scope of regulatory requirements. The CONTRACTOR will be required to comply with OSHA Regulations 5205.1000-5205.1040 and 5067.0300 for Confined Space Entry. Compliance with Confined Space Entry includes daily monitoring the confined space for four (4) gases and the daily confined space entry log. This daily confined space entry monitoring shall be for OSHA compliance for not only the contractor or subcontractor forces but shall also include monitoring for representatives from the Owner and Engineer. **Any fines imposed on the Owner or Engineer by any regulatory agency because of the contractor's non-compliance with OSHA Regulations shall be paid or reimbursed by the contractor.** The contractor will be required to comply with OSHA Regulations 29 CFR 1926.62 Lead for worker health. Management and supervisory personnel shall be responsible for employee training and compliance with this policy.
- I. The use of rope rigging where welding procedures are performed is not permitted.
- J. The contractor shall be responsible to secure all tank openings at the end of each day or at any time, he has temporarily left the job site. In place of manway covers the contractor may use adequately secured and locked grating type covers to secure all openings. Gratings used for ventilation purposes shall be of at least ¼-inch diameter wire mesh with minimum two (2) square inch mesh openings to allow adequate air passage.

3.7 SUPERINTENDENT

- A. The Contractor shall keep on this job a competent superintendent or crew foreman who shall be familiar with all phases of the work. The superintendent or crew foreman shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.
- B. The Contractor's superintendent shall have the experience, knowledge, and communication skills to receive guidance and direction from the Contractor at the jobsite and communicate that guidance to the workers.
- C. The superintendent or crew foreman shall be responsible to perform initial quality control inspection of the crew's workmanship for compliance with the specifications. When the work or materials are ready for inspection by the Owner's or Engineer's representative or inspector the superintendent or crew foreman shall give appropriate notice to the inspector.

- D. The contractor shall be responsible to perform initial testing to the interior wet coating below and above the HWL to ensure a holiday free surface.

3.8 INSPECTION OF WORK

- A. The Owner's personnel and the inspector shall at all times have access to the work, and the Contractor shall provide proper facilities for such access and inspection.
- B. The Engineer reserves the right to inspect the work at any time for compliance with all requirements of the specifications.
- C. The Engineer reserves the right to approve each phase of the work before further work may be done, to halt all work deemed to be improper or not in compliance with the specifications, and to require the Contractor to promptly correct all improper practices or deficient work.
- D. Inspections may include wet and/or dry film thickness gauging, visual surface inspection by the naked eye and/or a suitable magnifying instrument to detect runs, sags, drips, cracks, or other defects in the coating system.
- E. Inspections may also include any other examination of the prepared surfaces or coating system, deemed necessary by the Engineer, including random destructive film thickness and coating adhesion checks. The entire interior wet area of the tank shall be tested and inspected by the Engineer to ensure a holiday free surface. Interior wet area of the tank shall be tested and inspected by the Engineer to ensure that the coating has cured in accordance with the manufacturer's recommendations.
- F. Dry film thickness (DFT) readings of the coating are taken to provide reasonable assurance that the specified minimum DFT has been achieved. A minimum of five (5) separate spot measurements shall be made over every 100 square feet in area. Each spot measurement shall consist of an average of three (3) gage readings next to each other no further than six (6) inches apart. Each Spot measurement must be within the specified minimum thickness. The single gage readings, however, making up the spot measurement are permitted to be no less than 80% of the specified minimum thickness.
- G. The Contractor shall provide all necessary inspection equipment (at the discretion of the Engineer), labor, rigging, lighting and other equipment to facilitate this inspection.
- H. Contractor shall perform their own quality control / quality assurance prior to the Owner or Engineer / Inspector performing inspections.
- I. Any expenses incurred for corrective measures required as the result of improper practices and/or defective or deficient work shall be borne by the Contractor and the extent of these corrective measures shall be at the discretion of the Engineer. This includes costs for the Engineer to perform repeated and excessive re-inspection of defective or deficient work performed by the Contractor.

- J. Such inspection shall not relieve the Contractor from any obligation to construct the work strictly in accordance with the plans and specifications. Work not so constructed shall be removed and replaced by the Contractor at his own expense.

3.9 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Notify Engineer, minimum two days in advance, to permit observation of cleaned surfaces prior to application of each coat of paint prior to subsequent paint applications.
- C. Perform a wet mill thickness test.
- D. The Utility and/or its representatives may, at any time, inspect job progress, surface preparation, paint application, mil thickness, anchor pattern, substrate cleanliness, material, etc. If any deficiency is found, the Contractor shall remedy at his/her own expense. Any re-work shall not affect completion time.

3.10 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Collect waste material capable of constituting fire hazard, place in closed metal containers, and remove daily from site.
- C. Remove scaffolding, ladders, or other facilities at completion of work.
- D. Remove temporary heating and ventilating facilities.

END OF SECTION

SECTION 099715 - EXTERIOR AREA ABRASIVE BLAST AND COATING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Painting tank exterior area.
- C. Related Sections:
 - 1. Section 099713 – Interior Wet Area Abrasive Blast and Coating.
 - 2. Section 099714 – Interior Dry Area Spot Repair and Coating.
 - 3. Section 330110 - Water Tank Disinfection.
 - 4. Section 331617 - Water Storage Tank – Structural Modifications & Repairs.
 - 5. Appendix A – Elevated Water Tank Inspection Report.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Exterior Area Abrasive Blast and Coating:
 - 1. Basis of Measurement: By Lump Sum.
 - 2. Basis of Payment: Includes sandblasting; cleaning; all proper surface preparation for repainting; testing; DNR approval; all coats of required painting; temporary and permanent removals; disposal of spent abrasive and garbage; disinfection; and all materials, equipment, tools, machinery, labor, and construction means and methods necessary to complete the Exterior Area Abrasive Blast and Coating in place and ready for use.
- B. Water Storage Tank Exterior Lettering:
 - 1. Basis of Measurement: By Each Set of the Lettering of “MINERAL POINT”.
 - 2. Basis of Payment: Re-lettering “MINERAL POINT” in three (3) locations in one color selected by Owner at the existing height and font style; two coats of high gloss fluoropolymer paint; proper disposal of all debris; all necessary containment, air pollution prevention equipment, temporary tarpaulins, scaffoldings, power, supplies, paint testing, and all materials, equipment, tools, machinery, labor, and construction means and methods necessary to complete the Water Storage Tank Exterior Lettering in place and ready for use.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 - 3. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test.

- B. American Water Works Association:
 - 1. AWWA D102 - Standard for Coating Steel Water Storage Tanks.
- C. NSF International:
 - 1. NSF 61 - Drinking Water System Components - Health Effects.
- D. SSPC: The Society for Protective Coatings:
 - 1. SSPC PA 1 - Shop, Field, and Maintenance Painting of Steel.
 - 2. SSPC SP 6 - Commercial Blast Cleaning.
 - 3. SSPC SP 10 - Near-White Blast Cleaning.
- E. Wisconsin Department of Natural Resources Administrative Code
 - 1. Section NR 811

1.4 PERFORMANCE REQUIREMENTS

- A. Exterior Paint Performance Test Requirements:
 - 1. Exterior Exposure:
 - a. Method: Paint system applied to sandblasted steel panels, cured for a minimum of 7 days at 77 degrees F (25 degrees C) and exposed at 45 degrees facing South.
 - b. Performance Requirements: No blistering, cracking or delamination of film; not less than 85 percent gloss after 18 months exposure.
 - 2. Hardness:
 - a. Method: ASTM D3363.
 - b. Requirements: Minimum 6H.
 - 3. Humidity:
 - a. Method: ASTM D2247.
 - b. Requirements: No blistering, cracking, softening or delamination of film after 5,000 hours exposure.

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on finishing products.
- C. Samples:
 - 1. Submit two paper chip samples illustrating range of colors and textures available for each surface finishing product scheduled.
- D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

1.6 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted surfaces.

1.7 QUALITY ASSURANCE

- A. Paint:
 - 1. Comply with AWWA D102.
 - 2. Certified by NSF International in accordance with NSF 61, as acceptable for surfaces in contact with potable water.
- B. Obtain paint products from single source for Work specified in this section.
- C. Perform Work in accordance with the Wisconsin Department of Natural Resources Code, Section NR 811.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five (5) years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum five (5) years documented experience and having completed ten or more projects of similar size and scope of Work to the satisfaction and approval of the Owner.

1.9 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

- D. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.11 COATING AND COATING PRODUCTS

- A. The coating and coating products used to complete the project shall be specified in the Bid Item Descriptions or an approved equal. The products of other manufactures comparable in quality and type will be acceptable if the following conditions are met:
 - 1. Satisfactory data is submitted on past performance of the product on other water storage tanks.
 - 2. The product complies with State of Wisconsin Health Department Standards.
 - 3. The Engineer approves the product.
 - 4. No request for substitution shall be considered unless prior written approval has been obtained seven (7) days prior to the bid opening.
- B. All materials shall be brought to the job site in the original sealed and labeled containers of the coating manufacturer and shall be subject to inspection by the Engineer.
- C. The Contractor shall submit to the Engineer, immediately upon completion of the job, Certification from the manufacturer indicating the quantity of each coating purchased. Such Certification shall refer to the square footage figures provided to the manufacturer and the Engineer by the Contractor.
- D. All coating ingredients shall conform to current applicable specifications of the American Society for Testing and Materials. No coating materials shall be reduced or thinned except as specified or recommended by the manufacturer of the coating. The coatings shall be thoroughly mixed and kept thoroughly stirred during application, when applicable.
- E. All coating for the interior surfaces that will or may be exposed to the storage water shall be a tasteless and nonpoisonous product designed for such usage and approved by the Wisconsin Department of Natural Resources.
- F. The Contractor shall provide adequate job site storage for all coating materials, thinners, rags and waste materials, per the manufacturers shipping and storage requirements, state and local regulations, the Engineer's specifications, or as directed by the Engineer. Adequate job site storage facilities shall be defined as any temporary job site trailer, building or enclosed van providing shelter and temperature protection to stored coating materials, thinners and solvents which meet state and local regulations.

1.12 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.

- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- C. Unfavorable Weather Conditions
1. No surface preparation or coating application work shall be done under unfavorable weather conditions, unless the work is adequately protected, and then only with the specific approval of the Engineer.
 2. Engineer intends to monitor wind direction, wind speed, air temperature, steel temperature, dewpoint and relative humidity to ensure Contractors' compliance with the listed conditions.
 3. The Contractor shall record the wind direction, winds speed, dewpoint, relative humidity, air temperature, and surface temperature a minimum of three (3) times per day for each day of the Construction Schedule or each day the Contractor is on site performing the work. The daily log shall be submitted to the Engineer or Engineer's representative for comparison with the Contractor's data and verification of compliance.
 4. Contractor shall use all procedures necessary to ensure project completion within the allotted time period. This specifically includes heating, dehumidification, or other forced curing methods, as necessary, and approved by the engineer. These items are specifically included in the Contract Price, and their use alone shall not be cause for a change order. Prior to utilization of these methods, Contractor shall submit specific procedures to be utilized for approval in accordance with the specifications.
- D. Areas to Protect
1. Care must be taken when performing abrasive blasting and painting so that adjacent areas are not damaged by these operations. Protect during blasting operations and do not coat over: vent or overflow screens, ladder safety equipment devices, interior or exterior lighting, switches or outlets, aviation warning obstruction lights or their photoelectric cell switches, control boxes, whether electrical, electronic, or mechanical, or miscellaneous antenna equipment. Provide sufficient protection and control measures to prevent damage to these or other peripheral equipment which requires protection. Temporarily remove the ladder safety climb equipment for abrasive blasting and coating operations. Install ladder safety climb devices after approval of the coatings by the Engineer.
 2. The entrance of dirt, sediment, blast media, and other debris into the inlet/outlet pipe, as well as the entrance of residual water into the tank area from a faulty valve is to be prevented. To prevent this and protect the piping, the Contractor shall, prior to any surface preparation work, insert into the inlet/outlet pipe a heavy duty, inflatable flex-plug, such as those manufactured by Peterson Products Company of Fredonia, WI or rubber plugs such as those manufactured by Vanderlans and Sons, Inc. of Lodi, CA.
- E. Protection:

1. Cover miscellaneous tank openings, except as required for ventilation, to avoid accumulation of cleaning residue and paint material in overflows and inlet and outlet piping.
 2. Exterior Tank: Cover tank vents without sealing tight to prevent contamination of tank interior. Maintain ventilation of tank interior to avoid structural damage.
 3. Protect equipment from abrasion and paint damage.
 4. Cleaning and painting tank exterior after the tank is filled is not permitted.
- F. Tank Interior Work:
1. Ventilate tank interior to remove dust, fumes, and volatile gases as required by authorities having jurisdiction.
 2. Provide adequate lighting level for ability to perform and inspect Work.
 3. Keep manholes and other vent openings open during cleaning, surface preparation, painting and curing operations.
 4. Provide Engineer and laboratory personnel required to enter tank during cleaning or painting operations with safety equipment required by authority having jurisdiction.
- G. Protect surfaces from rapid curing caused by wind or sun exposure.
- H. Prevent rapid changes in temperature during curing and thermal shock cracks in finish material.

1.13 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Product Warranties.
- B. Furnish five (5) year manufacturer warranty for paints. Warrant all application and workmanship for a period of one (1) year from completion. If any failures occur, the contractor shall remedy at his/her own expense.

PART 2 PRODUCTS

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 EXTERIOR AREA COATING

- A. The tank exterior shall be coated with products manufactured by Tnemec Company, Inc. or approved equal as outlined below.

1. Tnemec Company, Inc.
 - a. Tnemec Company Zinc Rich Urethane, Epoxy, Urethane and Fluoropolymer coating system.
 - b. Primer: Tnemec Hydro-Zinc Series 91-H2O, 2.5 – 3.5 mils dry film thickness. The DFT of the primer at any individual spot measurement location shall be 2.5 mils minimum.
 - c. Intermediate 1: Tnemec Pota-Pox Plus Series N140, 4.0 – 6.0 mils dry film thickness. The DFT of the primer plus first intermediate coat at any individual spot measurement location shall be 6.5 mils minimum.
 - d. Intermediate 2: Tnemec Endurashield II Series 1075, 3.0-5.0 mils DFT. The DFT of the primer plus both intermediate coats at any individual spot measurement location shall be 9.5 mils minimum.
 - e. Finish: Tnemec HydroFlon Series 700-Color, 2.0-3.0 mils DFT.
 - f. The total dry film thickness including the primer and the finish coat shall be 11.5 mils minimum – 17.5 mils with an average of 14.5 mils DFT. The minimum dry film thickness of the coating at any individual spot location shall be 11.5 mils.
 - g. **Exterior intermediate coat colors to be one shade lighter than the subsequent coat. The Owner shall select the exterior finish color from the coating manufacturer’s standard color charts.**
2. Non-Skid Walkway
 - a. The non-skid walkway shall consist of one (1) additional coat applied between the 2nd intermediate and finish coats as specified. Approved abrasive shall be incorporated (mixed) thoroughly into the paint and applied evenly. Finish coat per Section 2.2 A. above.
3. **The exterior of the fluted pedestal does not require blasting/coating. The pedestal is made of COR-TEN steel intended to remain uncoated as this steel develops a self-sealing rust colored protective layer.**

2.3 TANK EXTERIOR LETTERING

- A. The Contractor shall paint the new lettering (“MINERAL POINT”) at the existing three (3) locations using the existing height and font style. Paint shall be Tnemec Series 700 HydroFlon applied at 2.0 to 3.0 mils DFT. Any techniques, such as the use of a template, that must be utilized shall be the responsibility of the Contractor and shall be done without additional compensation. The lettering color shall be selected by the Owner from coating manufacturer's standard color charts. The Logo details are shown in Appendix C.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.

3.2 PREPARATION

- A. Remove all surface contaminants in accordance with SSPC-SP 1 Solvent Cleaning. Abrasive blast entire exterior (minus the fluted column) to a NACE No. 3/SSPC-SP 6 Commercial Blast Cleaning. This specifically includes the roof, shell, bowl, all antenna, coaxial cable, and miscellaneous support brackets. **The exterior of the fluted pedestal does not require blasting/coating. The pedestal is made of COR-TEN steel intended to remain uncoated as this steel develops a self-sealing rust colored protective layer.**
- B. Apply a zinc/epoxy/urethane/fluoropolymer coating system as specified.
- C. Apply by brush one (1) additional stripe coat to ensure uniformity is thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, and other irregularities in the surface. This additional coat shall be applied after proper cure and approval of the intermediate coat and shall consist of color variation. i.e. this coat will typically be the finish coat color.
- D. Apply a non-skid walkway to the complete roof area inside the roof handrail assembly as specified.
- E. Exterior coating may only be spray applied within the containment, except the finish coat must be applied by brush or roller only. Painting outside of containment must be by brush or roller.
- F. The Contractor shall be fully responsible for proper clean up, testing, waste evaluation, waste tracking, documentation and disposal of exterior waste generated per federal (RCRA/EPA) and State of Wisconsin, Pollution Control Agency Regulations, and the Specifications.

3.3 EXTERIOR AREA ABRASIVE BLAST CONTAINMENT

- A. Provide containment of the exterior abrasive blasting operation in conformance with the specifications
- B. Contractor shall provide submittal of the containment plan outlining all the details submitted in drawings, including equipment, tarps, structural loading that the containment system will impart to the tank(s), structural loading calculations, dust collection equipment and if the contractor chooses to employ any wet abrasive blasting, the inhibitor the CONTRACTOR plans to employ with the wet abrasive blasting operation.

- C. The containment plan must be submitted for review and approval by the Engineer seven (7) days before the preconstruction meeting. Work on the project will not begin without an approved containment plan.
- D. As specified, provide 100 percent impervious ground coverage in all areas adjacent to the tank and containment apparatus to ensure spent abrasive and paint do not come in contact with the ground. Ground cover must extend beyond the containment in compliance with MPCA rules or as allowed by the site conditions.
- E. The Contractor shall be fully responsible for proper clean up, testing, waste evaluation, waste tracking, documentation and disposal of exterior waste generated per federal (RCRA/EPA) and State of Wisconsin, Pollution Control Agency Regulations, and the Specifications.
- F. Recover, remove, and dispose of properly, all spent abrasives, dust, dirt, paint chips, spent solvent and paint containers, etc., as specified in Section 3.7 of this Specification. Refer to the Lead Paint Test results in Appendix D of the Elevated Water Tank Inspection Report.
- G. The Contractor shall be fully responsible to provide full containment of the exterior tank abrasive blasting operation, including a top bonnet or cover to prevent the drift abrasive and existing exterior paint removed onto adjacent property, streets, or structures. **Therefore, containment and disposal per state and federal regulations will be mandatory.** In conjunction with full containment the contractor shall be responsible to provide adequate dust collection or negative air to the containment system to prevent the release of emissions to the environment.
- H. Provisions shall be made to remove and collect dust particles from the interior of the containment. As such, the proper use of a dust collector is mandatory.
- I. As an option, the Contractor may employ a wet abrasive blasting operation, in conjunction with full containment of the exterior to achieve the goal of, control of dust emissions. **The Contractor must submit for review and approval to the Engineer and Owner a written plan outlining all the details, equipment, and inhibitor the Contractor plans to employ with the wet abrasive blasting operation.** The Engineer or Owner reserves the right to accept or reject the Contractor's proposed plan. The Contractor expressly agrees to abide by the decision of the Engineer or Owner in accepting or rejecting the Contractors wet abrasive blasting or environmental compliance plan.
- J. The Contractor expressly agree to obey the verbal or written direction and instruction of the Engineer, Inspector, or Owners representative in determining when the exterior abrasive blasting operation may proceed or must be suspended due to excessive winds, or drift of dust, spent abrasive and paint chips outside the area of containment.

- K. Screens used for containment shall be inspected and approved for use by the Engineer, Inspector, or Owners representative. Windscreens used for containment shall be solid screens. They shall be UV-Stabilized, weather, and solvent resistant.
- L. The Contractor shall be fully responsible to provide a 100% impervious ground coverage in all areas adjacent to the tank for the purpose of ensuring the recovery of (a minimum) 95% of all spent abrasive, removed paint, and debris from the abrasive blast operation. Ground cover shall consist of reinforced plastic or canvas tarps sufficiently overlapped and secured to prevent contamination of the ground by contact of the abrasive and paint chips debris.
- M. The Contractor shall be responsible to provide temporary, minimum 6-foot height, wire mesh or snow type **fencing around the perimeter of the Owner's property** to prevent unauthorized access to the site. Corner and intermediate posts shall be adequate to support the fence and placed at maximum 12-foot intervals. The Contractor shall install adequate, lockable gates for access by personnel and contractor equipment. The Contractor expressly agrees to abide by the decision of the Owner or Engineer in accepting or rejecting the Contractors temporary fencing installation.
- N. Disposal of waste materials generated by the Contractor or his subcontractor(s) will be as specified in Section 3.7 of this Specification.

3.4 BLAST CLEANING

- A. Use proper equipment and abrasives when blast cleaning to produce the mil profile, within the range of 2.0 to 3.5 or as recommended by the coating manufacturer. Do not reuse sand or flint abrasives.
- B. The abrasive used shall be of the type that is graded as to proper size, shape, and hardness. It shall be free of contaminants and shall not embed itself in the blasted surface. Silica sand, Flint, Garnet, or Quartz type abrasives shall be chemically washed, dried, dust, dirt, and fines free, resistant to fracture (shattering), and contain no leachable contaminants. Synthetic (non-metallic and non-siliceous) abrasives such as Silicon Carbide, Aluminum Oxide and Refractory Slag products shall meet the above criteria. The use of reduced or dust free abrasive blasting is required. The use of a proprietary admixture to the selected abrasive such as "Blastox"™ is optional to ensure satisfactory toxicity characteristics testing. Prior to start-up of the project, samples of the Contractor's selected abrasive and/or abrasive/admixture shall be submitted to the Engineer for testing and approval. Random field testing of the abrasive shall be done, as directed by the Engineer to ensure the abrasive used complies with these requirements.
- C. The use of recyclable abrasive, such as steel grit, is neither specifically encouraged nor prohibited. Contractor's requesting the use of recyclable abrasive must comply with the specified mil profile. Waste generated by this method of abrasive blasting may be considered **Hazardous Waste** and as such must be disposed of accordingly.

- D. Additional care is required during cleanup to ensure all abrasive residual is removed prior to coating application. All compressed air supply shall be properly equipped with suitable after coolers, oil, and moisture separators to prevent contamination of abrasives and/or blasted surfaces. These separators shall be of the continuous bleeding or automatic dumping type. In order to prevent contamination of abrasives and/or blasted surfaces, it is recommended that the separators be installed between the compressor air outlet and the blasting pot compressed air inlet.
- E. Stop abrasive blast cleaning in sufficient time to remove all dust, spent abrasive and other foreign matter from and around all blasted surfaces (including rigging and equipment) and to allow the atmosphere to clear before any coating is done. Removal of these materials shall be by clean brush or suitable industrial vacuum with particular attention given to welds, pockets, poorly accessible areas or any overhead areas.
- F. Apply the first coat to all prepared surfaces, except that there shall remain uncoated a 3-inch to 4-inch border of blasted steel at the end of each workday. When blast cleaning resumes the following workday, this border shall be re-blasted up to and including 1 inch to 3 inches of the previous primer coating.
- G. Take extra care during all blasting operations, to prevent damage or abrasive impingement upon previously applied-coated areas.
- H. A prime coat shall be applied within eight (8) hours after sandblasting. When the humidity exceeds 80%, the prime coat shall be applied within four (4) hours after sandblasting. If conditions are questionable, the Engineer shall make the decision, and the Contractor shall accept his interpretation as final and binding. See paragraph 3.01.B (Workmanship) for additional temperature and humidity limitations.
- I. A daily inspection of the separators and compressed air supply will be required to ensure cleanliness of all compressed air supplied for abrasive blasting. This test will be performed by a blotter test. A clean white Blotter is held, no more than 18 inches, from the air supply, downstream of moisture and oil separators. The air supply is directed at the Blotter for approximately (2) two minutes. The Blotter is then examined visually for signs of oil and moisture. A clean blotter at test completion means a successful passing of the air supply test. Failure to pass the compressed air test will be justification for rejection of abrasive blasting performed that day. The Engineers discretion will be final in this determination.

3.5 APPLICATION AND MATERIALS

- A. Apply paint in accordance with manufacturer's instructions and SSPC PA 1.
- B. The Water Utility shall be responsible for draining the reservoir.
- C. All work of this Contract shall be done in a competent manner by skilled personnel experienced in the particular type of work being performed. The coating shall be

performed in a manner satisfactory to the Engineer and using approved methods, acceptable tools, and practices.

- D. Proceed with surface preparation and coating application only when air and surface temperatures are above the manufacturers recommended minimum surface temperature and below 100 degrees F, and surface temperature is at least 5 degrees above wet bulb air temperature reading. Coating shall not be applied to dust, wet or damp surfaces, and shall not be applied in rain, snow, fog, or mist, or when relative humidity exceeds 85 percent. No coating shall be applied when it is expected that the relative humidity will exceed 85 percent or when the air temperature will drop below 40 degrees F within 8 hours after the application of the coating. If working conditions are questionable, the Engineer shall make the decision and the Contractor shall accept Engineer's interpretation as final and binding.
- E. Each coat shall be applied at the specified rate and in the manner recommended by the coating manufacturer and it shall be well worked into the surface to which applied. No laps or brush marks shall show, and primer shall be applied to produce as uniform a coating thickness and complete coverage as is possible. Exterior primer coatings shall be inspected and approved by the Owner's representative, Engineer, or inspector within 24-hours after application to ensure a holiday free coat of primer. The film thickness of the coatings will be measured and any readings below the specified film thickness, or holidays shall be corrected by applying an additional coat(s). Where thinning is necessary, only the products of the manufacturer furnishing the coating, and for that particular purpose, shall be allowed. All thinning shall be done strictly in accordance with the manufacturer's instructions, as well as with the full knowledge and approval of the Engineer. Dry film thickness will be measured by means of the "Mikrotest" gage manufactured by the Nordstrom Corporation of Amherst, Ohio or equivalent; and measurements of wet mil thickness' will be accomplished by use of the "Nordson" wet film gage or such other gage as the Engineer might determine as being satisfactory.
- F. Care shall be given to ensure one additional and uniform stripe coat of intermediate coat is carefully applied by brushing around rivet heads, weld seams, scab marks, plate overlap, joints, and other irregularities in the surface. Each coat shall be allowed to dry and/or cure thoroughly before either the next coat is applied, or the tank is placed into service as required by the coating manufacturer's written recommendations. Stripe coating shall be applied prior to the application of the full finish coat.
- G. If the coating is applied by spraying, use suitable nozzles to provide an adequate supply of air within the proper pressure range to the liquid in the container and to the atomizing nozzle, all as recommended by the coating and equipment manufacturers as being best suited or necessary for the production of good work. All necessary precautions must be taken to avoid spray fallout on and the consequent damage to any works, improvements or properties either of the Owner or of other parties, wherever located. The Contractor shall be responsible for all damage resulting from drifting of the spray.

- H. Exterior spray painting shall be permitted, but only within the containment. In addition to the containment, the Contractor shall take any and all necessary precautions to avoid paint fallout on the consequent damage to any works, improvements or properties either of the Owner or of other parties, wherever located. The Contractor shall be responsible for all damage resulting from drifting of the paint.
- I. If applied by brushing, the coating shall be brushed on in one direction, and then smoothed in a direction at right angles thereto, so as to produce as uniform thickness of coating and as complete a coverage as possible. Such two-directional brushing shall be considered as "one coat" within the meaning of these specifications.
- J. Application of the primer or intermediate coats to the interior tank structural, including "I" beams, compression ring(s), support column(s), attachment brackets, nut/bolt assemblies and roof plate overlap seams shall be by brush or brush/spray application to ensure a uniform coat of primer thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, beam flanges and irregularities in the surface. This application does not constitute the specified "stripe coat". No interior wet coating shall be applied by roller application that sheds any roller hairs into the coating.
- K. Finish coat shall be uniform in color and sheen without streaks, laps, runs, sags or missed areas. Exterior finish coat shall be applied by brush or roller only.
- L. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- M. Interior Wet - The Contractor shall clean the tank of all sediment, mud, debris, and any small amount of water remaining after draining. All paint systems and application procedures shall be consistent with current AWWA Standard D102 and be approved by the Wisconsin Department of Natural Resources (DNR)

3.6 CLEANUP AND STERILIZATION

- A. On completion of the work on the interior of the tank, the Contractor shall remove all dirt, litter, and leave all surfaces in reasonably clean condition, scrubbing the same with water and approved soap or other cleaning agent. Cleaning and rinsing shall be performed by a Contractor provided power or jet truck using a minimum 2-inch diameter sanitary hose. When this has been completed, inspected, and approved by the Owner or Engineer, the final sterilization of said interior will be done by the Contractor at no cost to the Owner.
- B. The Contractor shall, at all times, keep the premises free from accumulations of waste material or rubbish caused by his employees or work. He shall clean-up abrasive material or rubbish on a daily regular schedule as directed by the Engineer. All unneeded construction equipment shall be removed from the site and all damages,

repaired expeditiously so that the adjacent property is inconvenienced as little as possible.

- C. During exterior sandblasting and coating operations, the Contractor shall provide adequate protection and containment to prevent damage to adjacent structures and property by his operations. The Contractor shall also perform intermittent or periodic clean-up of adjacent grounds to prevent the accumulation of sandblast sand and debris caused by his operations. This shall include but not be limited to, sidewalks, streets, driveways, yards, and rooftops.
- D. The Contractor shall be fully responsible to recover, remove and dispose of properly all spent abrasives, removed coating and paint, spent solvents, paint containers and other non-specific waste in accordance with current State and Federal regulation included but not limited to the 1976 Resource, Conservation and Recovery Act (RCRA) and its amendments, specifically the 1984 Hazardous and Solid Waste Amendments to RCRA. Disposal of "empty containers" shall be in accordance with RCRA 40 CFR 261.7 and Wisconsin State Regulations. **In addition, the contractor shall submit for review and approval his Toxicity Characteristic Leaching Procedure (TCLP) sampling plan.** The Sampling Plan and quality control measures must be in conformance with current EPA Test Procedures and current State of Wisconsin, Pollution Control Agency Requirements. Proper documentation of this process is required by EPA and this specification. The Contractor is also responsible to provide proper documentation per RCRA/EPA and State regulations for identifying, tracking and disposal of the waste generated. At a minimum, this documentation shall include a Waste Evaluation Form, Industrial Solid Waste Tracking Form, Landfill Special Waste Tracking Form, and letter of acceptance of the waste by the appropriate landfill or disposal site.
- E. Under this Agreement, the Contractor shall be responsible for compliance with local, state, and federal regulations concerning emissions or disposal of solid, particulate, liquid, or gaseous matter as a result of the cleaning, painting or other operations. Compliance with this provision shall be accomplished without direct supervision from the Engineer or Owner. The Owner shall not grant additional compensation for changes in the law, regulations, or interpretations of said laws or regulations. The burning of trash, paper or wood on the job site is not permitted. Unless otherwise provided by these specifications, the Contractor is responsible for all containing, shielding, waste retrieval or other precautions required by any regulatory agency at no additional cost to the Owner. **Any fines imposed on the Owner or Engineer by any regulatory agency because of the contractor's non-compliance with Environmental Regulations shall be paid or reimbursed by the contractor.**
- F. The Contractor shall perform timely laboratory testing of waste materials generated on the job site to determine its specific classification for proper disposal in accordance with this specification and all applicable state and federal regulations. A minimum of four (4) TCLP tests shall be performed or as required by regulations on both the interior and exterior waste materials. TCLP testing shall be for all eight (8) specific constituent

concentrations (eight (8) heavy metals/inorganics) as shown in 40 CFR 261.24, Table 1 or as amended by regulation.

- G. The Owner intends to perform timely laboratory testing of waste materials to verify test results taken by the Contractor. In the event of discrepancies in test results and the resultant classification of waste materials, it is agreed by the parties to this Contract that the Engineer shall perform independent testing and shall determine all questions in relation to the classification of waste materials. **The Contractor will be held liable for all supplementary testing, Engineering and associated Contract Administration cost.**
- H. On or before the completion of work, the Contractor shall, unless otherwise directed in writing, remove all temporary works, tools and machinery or other construction equipment placed by him. He shall remove all rubbish from any grounds that he has occupied and shall leave all of the premises and adjacent property affected by the operation in a neat and restored condition satisfactory to the Engineer. Restoration of grass areas shall be by the placement of black soils suitable for the growing of grass and seeded to the Owners satisfaction.

3.7 VENTILATION AND SAFETY REQUIREMENTS

- A. The Contractor shall maintain adequate and continuous explosion-proof ventilation during surface preparation, coating operations and recoat and curing periods. This ventilation shall be of the suction type, installed on the roof ventilation manways or roof openings and shall be of sufficient capacity to maintain throughout the tank interior a clear atmosphere that is well below explosive and toxic limits. All ventilation shall be in compliance with OSHA and the Wisconsin Department of Labor and Industry for Confined Spaces Entry.
- B. Ventilation of the interior shall be performed by the use of dust collectors at manways and ventilation openings. Alternatively, ventilation fans may be used, with the Engineer's approval, at roof manways and ventilation openings if they have a minimum free air capacity of 6200 CFM and include dust socks to prevent the escape and drift of dust generated by interior abrasive blasting. The use of pneumatic copious air movers is not permitted.
- C. Arrange the ventilation system, including all fans and temporary ductwork, so that fresh air is drawn into the tank at the bottom and is exhausted at the top with an upward air movement pattern within the tank that permits no still air spaces to exist in any area. Give particular attention to floor level or lower spaces and pocket areas where heavier-than-air solvents and particulate matter are likely to accumulate. Said ventilation shall be sufficient for the removal of dust, coating fumes or other volatile gases and moisture to such an extent as to prevent any undesirable accumulation of any thereof to the hazard of the workers or the work.
- D. All electrical equipment, tools, and ventilation fans shall be explosion-proof and/or non-sparking and shall be maintained in good working order. Spray equipment shall be as

recommended by, or acceptable to the coating's manufacturer, and shall be thoroughly cleaned before and after use with the appropriate cleaning solvents.

- E. Contractor shall provide adequate explosion-proof lighting during all surface preparation, coating operations, and inspection. This lighting shall comply with SSPC Technology Guide No. 12. Surface preparation and coating application require a minimum of 20-foot candles and recommends 50-foot candles. The same guide states inspection work requires a minimum of 50-foot candles and recommends 200-foot candles.
- F. In the event heating devices are used, they shall be explosion-proof and of the type that do not exhaust sooty or oily residues or any other contaminants into the tank. Only indirect heat heating units can be used which will not cause the products of combustion to condense.
- G. Prior to use, store all coating materials in a secure area that shall provide protection from weather and temperature beyond manufacturers requirements. The area shall be maintained in a safe, neat, and clean manner and free from fire, explosion, or other hazards.
- H. All work shall be performed in a safe and orderly manner, all in compliance with the standards as prescribed by OSHA and the Wisconsin Department of Labor and Industry, Division of Accident Prevention. The Contractor is directed to the Supplemental Conditions Section for the full scope of regulatory requirements. The CONTRACTOR will be required to comply with OSHA Regulations 5205.1000-5205.1040 and 5067.0300 for Confined Space Entry. Compliance with Confined Space Entry includes daily monitoring the confined space for four (4) gases and the daily confined space entry log. This daily confined space entry monitoring shall be for OSHA compliance for not only the contractor or subcontractor forces but shall also include monitoring for representatives from the Owner and Engineer. **Any fines imposed on the Owner or Engineer by any regulatory agency because of the contractor's non-compliance with OSHA Regulations shall be paid or reimbursed by the contractor.** The contractor will be required to comply with OSHA Regulations 29 CFR 1926.62 Lead for worker health. Management and supervisory personnel shall be responsible for employee training and compliance with this policy.
- I. The use of rope rigging where welding procedures are performed is not permitted.
- J. The contractor shall be responsible to secure all tank openings at the end of each day or at any time, he has temporarily left the job site. In place of manway covers the contractor may use adequately secured and locked grating type covers to secure all openings. Gratings used for ventilation purposes shall be of at least ¼-inch diameter wire mesh with minimum two (2) square inch mesh openings to allow adequate air passage.

3.8 SUPERINTENDENT

- A. The Contractor shall keep on this job a competent superintendent or crew foreman who shall be familiar with all phases of the work. The superintendent or crew foreman shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.
- B. The Contractor's superintendent shall have the experience, knowledge, and communication skills to receive guidance and direction from the Contractor at the jobsite and communicate that guidance to the workers.
- C. The superintendent or crew foreman shall be responsible to perform initial quality control inspection of the crew's workmanship for compliance with the specifications. When the work or materials are ready for inspection by the Owner's or Engineer's representative or inspector the superintendent or crew foreman shall give appropriate notice to the inspector.
- D. The contractor shall be responsible to perform initial testing to the interior wet coating below and above the HWL to ensure a holiday free surface.

3.9 INSPECTION OF WORK

- A. The Owner's personnel and the inspector shall at all times have access to the work, and the Contractor shall provide proper facilities for such access and inspection.
- B. The Engineer reserves the right to inspect the work at any time for compliance with all requirements of the specifications.
- C. The Engineer reserves the right to approve each phase of the work before further work may be done, to halt all work deemed to be improper or not in compliance with the specifications, and to require the Contractor to promptly correct all improper practices or deficient work.
- D. Inspections may include wet and/or dry film thickness gauging, visual surface inspection by the naked eye and/or a suitable magnifying instrument to detect runs, sags, drips, cracks, or other defects in the coating system.
- E. Inspections may also include any other examination of the prepared surfaces or coating system, deemed necessary by the Engineer, including random destructive film thickness and coating adhesion checks. The entire interior wet area of the tank shall be tested and inspected by the Engineer to ensure a holiday free surface. Interior wet area of the tank shall be tested and inspected by the Engineer to ensure that the coating has cured in accordance with the manufacturer's recommendations.
- F. Dry film thickness (DFT) readings of the coating are taken to provide reasonable assurance that the specified minimum DFT has been achieved. A minimum of five (5) separate spot measurements shall be made over every 100 square feet in area. Each

spot measurement shall consist of an average of three (3) gage readings next to each other no further than six (6) inches apart. Each Spot measurement must be within the specified minimum thickness. The single gage readings, however, making up the spot measurement are permitted to be no less than 80% of the specified minimum thickness.

- G. The Contractor shall provide all necessary inspection equipment (at the discretion of the Engineer), labor, rigging, lighting and other equipment to facilitate this inspection.
- H. Contractor shall perform their own quality control / quality assurance prior to the Owner or Engineer / Inspector performing inspections.
- I. Any expenses incurred for corrective measures required as the result of improper practices and/or defective or deficient work shall be borne by the Contractor and the extent of these corrective measures shall be at the discretion of the Engineer. This includes costs for the Engineer to perform repeated and excessive re-inspection of defective or deficient work performed by the Contractor.
- J. Such inspection shall not relieve the Contractor from any obligation to construct the work strictly in accordance with the plans and specifications. Work not so constructed shall be removed and replaced by the Contractor at his own expense.

3.10 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Notify Engineer, minimum two days in advance, to permit observation of cleaned surfaces prior to application of each coat of paint prior to subsequent paint applications.
- C. Perform a wet mill thickness test.
- D. The Utility and/or its representatives may, at any time, inspect job progress, surface preparation, paint application, mil thickness, anchor pattern, substrate cleanliness, material, etc. If any deficiency is found, the Contractor shall remedy at his/her own expense. Any re-work shall not affect completion time.

3.11 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Collect waste material capable of constituting fire hazard, place in closed metal containers, and remove daily from site.
- C. Remove scaffolding, ladders, or other facilities at completion of work.
- D. Remove temporary heating and ventilating facilities.

END OF SECTION

SECTION 134713 - CATHODIC PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cathodic Protection System and Installation.

B. Related Sections:

1. Section 099713 – Interior Wet Abrasive Blast and Coating.
2. Section 099714 – Interior Dry Area Spot Repair and Coating.
3. Section 099715 – Exterior Area Abrasive Blast and Coating.
4. Section 330110 - Water Tank Disinfection.
5. Section 331617 – Water Storage Tank – Structure Modifications.
6. Appendix A – Elevated Water Tank Inspection Report

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Cathodic Protection System: **(Alternate 'B')**

1. Basis of Measurement: By Lump Sum.
2. Basis of Payment: Includes all materials, equipment, tools, and labor necessary to remove the existing cathodic system; supply and install a new Cathodic Protection System within the interior of the water storage tank; installation of necessary anode brackets for cable and anodes; complete electrical and sensor wiring; and all materials, equipment, tools, machinery, labor, and construction means and methods to complete the Cathodic Protection System in place and ready for use.

1.3 REFERENCES

A. ASTM International:

1. ASTM A518/A518M - Standard Specification for Corrosion-Resistant High-Silicon Iron Castings
2. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire
3. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
4. ASTM B843 – Standard Specification for Magnesium Alloy Anodes for Cathodic Protection.
5. ASTM D709 – Standard Specification for Laminated Thermosetting Materials.
6. ASTM D1248 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.

B. NACE International:

1. NACE SP0196 – Galvanic Anode Cathodic Protection of Internal Submerged Surfaces of Steel Water Storage Tanks.

2. NACE AP0388 – Impressed Current Cathodic Protection of Internal Submerged Surfaces.
- C. Wisconsin Department of Natural Resources Administrative Code:
 1. Wisconsin Department of Natural Resources Administrative Code NR 811.
- D. National Electrical Code (NEC):
 1. All work shall be completed as defined in the National Electrical Code (NEC).

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate structure locations, elevations, piping, conduits, Anode location and number, panels, junction boxes, monitors, controllers, sizes and elevations of penetrations, and structure components.
- C. Product Data: Submit component construction, features, configuration, and dimensions.

1.5 QUALITY ASSURANCE

- A. Work and materials shall conform to the applicable requirements of the Wisconsin Department of Natural Resources code.

1.6 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five years of documented experience.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.

PART 2 PRODUCTS AND INSTALLATION

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.

2.2 CATHODIC PROTECTION SYSTEM

- A. The Contractor shall supply and install a cathodic protection system sized and designed for the water storage tank listed under this Project. The cathodic protection system shall be designed and installed by competent technical personnel.

- B. The Contractor is responsible for the supply and installation of all electrical, controls, necessary conduits, wiring, junction boxes, surge protection, and other appurtenances necessary for the completion and operation the cathodic protection system.
- C. Each item of equipment will be identified and shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed to the equipment for reference in future maintenance and repairs. Nameplates will be laminated plastic for each piece of equipment.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

3.2 INSTALLATION

- A. The Contractor shall supply and install a cathodic protection system sized and designed for the water storage tank listed under this Project. The cathodic protection system shall be designed and installed by competent technical personnel.
- B. The Contractor is responsible for the supply and installation of all electrical, controls, necessary conduits, wiring, junction boxes, surge protection, and other appurtenances necessary for the completion and operation the cathodic protection system.
- C. Electrical installations shall conform to IEEE C2, NFPA 70, and to the National Electric Code (NEC).

3.3 ICING CLIMATE REQUIREMENTS

- A. Suspend anodes in a manner to prevent the anodes and suspending cables from being damaged by freezing or falling ice.

3.4 ANODE HANGERS

- A. Anode hangers shall electrically insulate the anode suspending wire from the tank steel.

3.5 CATHODIC PROTECTION SYSTEM FIELD TESTING

- A. Upon completion of the installation, fill tank to maximum working level. The Contractor shall inspect and test the cathodic protection system in the presence of the Owner and Engineer. The Contractor shall record test data, including date, time, and location of testing. Results of the tests shall be submitted to the Owner and Engineer. The Contractor shall correct and retest, at the Contractor's expense,

deficiencies or defects in the materials and installation observed during the inspections and tests.

3.6 CATHODIC PROTECTION SYSTEM TRAINING

- A. Competent technical personnel shall give the Owner and representatives full instruction and training in the adjustment, operation, and maintenance of the cathodic protection system. Instruction and training shall be completed within one (1) week of the system being accepted and ready for use.

3.7 ONE YEAR WARRANTY PERIOD TESTING

- A. Inspect, test, and adjust the cathodic protection system semi-annually for one (1) year (two (2) inspections total) to ensure continued conformance operation of the protection system. The inspection test results shall be documented and submitted to the Owner and Engineer for approval.

3.8 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 – Execution and Closeout Requirements: Field inspecting, testing, adjusting, operation and maintenance data, and completion.

END OF SECTION 134713

SECTION 329100 - LANDSCAPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparation of subsoil.
 - 2. Placing topsoil.
 - 3. Seeding.
 - 4. Mulching.
 - 5. Fertilizing
 - 6. Maintenance.
 - 7. Remove and reinstall incidentals.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Temporary Seeding: (If Applicable)
 - 1. Basis of Measurement: By acre of landscaping completed.
 - 2. Basis of Payment: Includes preparation of subsoil and topsoil, supply and placement of topsoil, fertilizing, seeding, mulching, watering and maintenance, and all equipment, tools, machinery, materials, labor, and construction means and methods to properly install Temporary Seeding.

- B. Landscaping:
 - 1. Basis of Measurement: Incidental to the Project.
 - 2. Basis of Payment: Includes preparation of subsoil and topsoil; supply and placement of topsoil, fertilizer, seeding, mulching, and erosion mat (if utilized); watering; maintenance; removal of erosion matting once grass has established; removing and reinstalling street signs (if disturbed), bushes, shrubs, yard landscaping, rock and decorative landscaping; removal, temporary relocating, and reinstallation or replacement of mailboxes (if necessary); and all equipment, tools, machinery, materials, labor, and construction means and methods to properly install Landscaping.

1.3 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for seed mix, fertilizer, and mulch.

1.5 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.
- B. Perform all work to the specifications herein. If an item is not clearly specified refer to the following sections in the Standard Specifications by the Wisconsin Department of Transportation:
 - 1. Section 625: Topsoil and Salvaged Topsoil
 - 2. Section 627: Mulching
 - 3. Section 629: Fertilizer and Agricultural Limestone
 - 4. Section 630: Seeding

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.7 MAINTENANCE SERVICE

- A. Section 01700 - Execution Requirements: Requirements for maintenance service.
- B. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition.

PART 2 PRODUCTS

2.1 All Products to be domestically made, manufactured, produced, and assembled in the United States of America.

2.2 TEMPORARY SEED MIXTURE

- 1. Use the following temporary seeding rates:

<u>Species</u>	<u>lbs/acre</u>	<u>Percent Purity</u>
Oats	131 ¹	98
Cereal Rye	131 ²	97
Winter Wheat	131 ²	95
Annual Ryegrass	80 ²	98

¹ Spring and summer seeding

² Fall Seeding

2.3 PERMANENT SEED MIXTURE

- A. Use seed mixture Number 40 as specified in the Standard Specifications by the Wisconsin Department of Transportation:
- | | |
|--------------------------------------|-------------|
| 1. Kentucky Bluegrass: | 35 percent. |
| 2. Red Fescue: | 20 percent. |
| 3. Hard Fescue: | 20 percent. |
| 4. Improved Fine Perennial Ryegrass: | 25 percent |

2.4 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots. Material salvaged from site can be used if approved by the Engineer and Owner.

2.5 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are acceptable if approved of by Engineer.
- B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil or to the following proportions: Nitrogen 20 percent, phosphoric acid 10 percent, and soluble potash 10 percent.
- C. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- D. Erosion Fabric: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed on two sides in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, six (6) inches long. Provide American Excelsior Curlex II or pre-approved equal.
- E. Stakes: Softwood lumber, chisel pointed.
- F. String: Inorganic fiber.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.
- C. Conform all work to technical standard 1059, Seeding for Construction Site Erosion Control and with technical standard 1058, Mulching for Construction Sites, as published by the Wisconsin Department of Natural Resources.

3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.
- C. Scarify subsoil to depth of six (6) inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.3 PLACING TOPSOIL

- A. Spread topsoil to minimum depth of six (6) inches over area to be seeded, unless otherwise noted on drawings. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Install edging at periphery of seeded areas in straight lines to consistent depth.

3.4 FERTILIZING

- A. Apply fertilizer at application rate of 12 pounds per 1,000 square feet.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine used to apply seed.
- D. Mix fertilizer thoroughly into upper two (2) inches of topsoil.
- E. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.5 SEEDING

- A. Apply seed at rate of two (2) lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: Areas after September 15 which fail to become established in the fall shall be re-seeded, re-fertilized, and re-mulched the following spring by June 1.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

- E. Roll seeded area with roller not exceeding 112 lbs/linear foot.
- F. Immediately following seeding and compacting, apply mulch to a loose thickness of one (1) - two (2) inches. Maintain clear of shrubs and trees.
- G. Apply water with fine spray immediately after each area has been mulched. Saturate to four (4) inches of soil.

3.6 HYDROSEEDING

- A. At the contractor's option: seed, fertilizer, and mulch may be applied by hydroseed method. Mix components in water using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application. Include nonasphaltic-tackifying agent in mixture.
- B. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate required to obtain specified seed sowing rate.

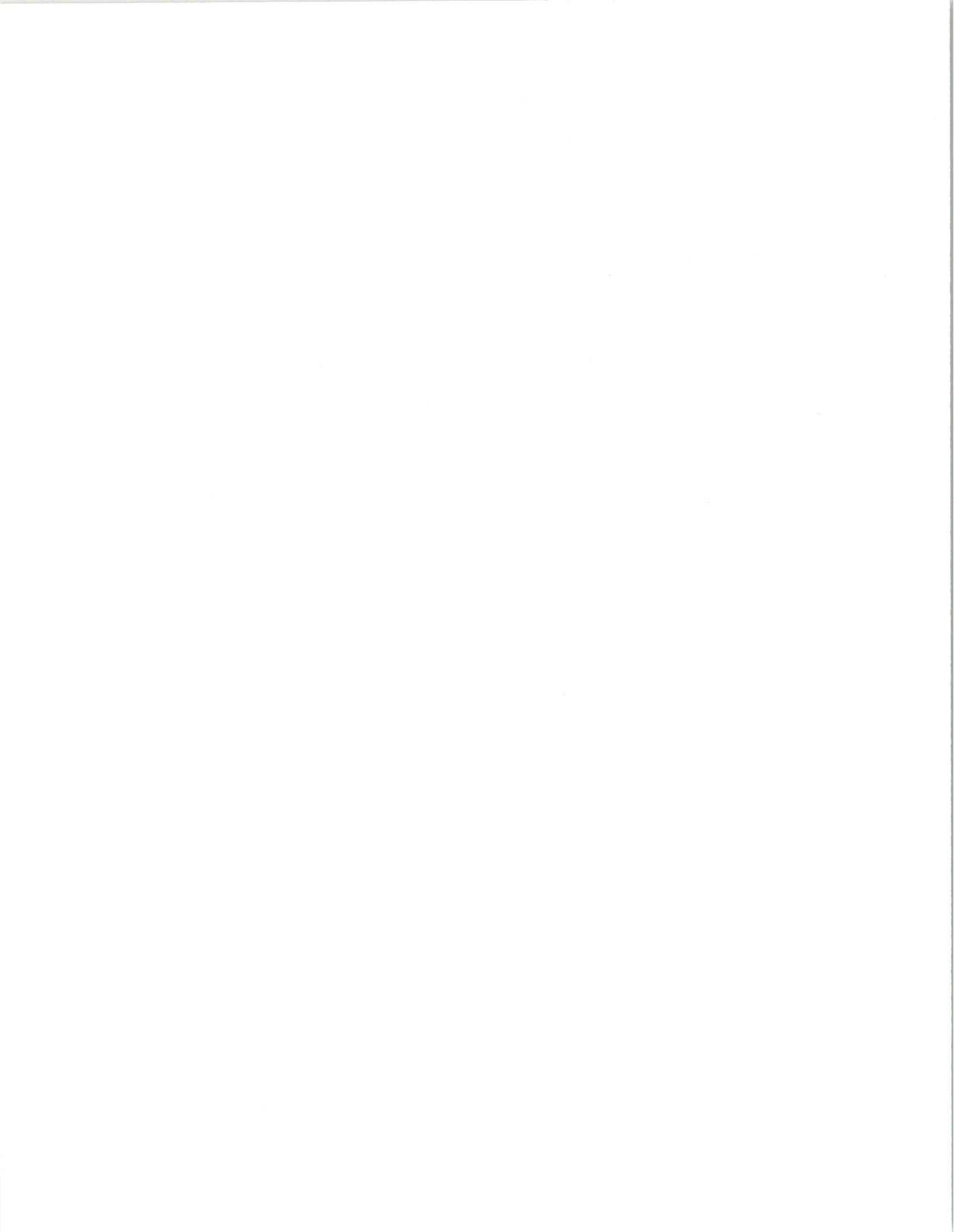
3.7 SEED PROTECTION

- A. Cover seeded slopes where grade is four (4) inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in six (6) inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36-inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum six (6) inches.

3.8 MAINTENANCE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition.
- B. Water to prevent grass and soil from drying out. Minimum three (3) times required if dry conditions exist.
- C. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.
- D. Immediately reseed areas showing bare spots.
- E. Repair washouts or gullies.
- F. Protect seeded areas with warning signs during maintenance period.

END OF SECTION 329100



SECTION 329110 - EROSION CONTROL DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silt Fence.
2. Erosion Bales.
3. Sediment Logs.
4. Erosion Mat.
5. Inlet Protection.
6. Rock Ditch Checks.
7. Construction Tracking Pad.
8. Staging Area.
9. Haul Road.
10. Dust Control.
11. Stream Crossings.
12. Other Erosion Control Devices.

B. Related Sections:

1. Section 099713 – Interior Wet Area Abrasive Blast and Coating.
2. Section 099714 – Interior Dry Area Spot Repair and Coating.
3. Section 099715 – Exterior Area Abrasive Blast and Coating.
4. Section 329100 – Landscaping.
5. Section 331617 - Water Storage Tank – Structural Modifications & Repairs.
6. Section 331621 – Pressure Washing.

1.2 MEASUREMENT AND PAYMENT

A. Erosion Control Methods and Devices:

1. Basis of Measurement: Incidental to the Project.
2. Basis of Payment: Includes excavation, supply and installation of erosion control devices, management and maintenance of the erosion control methods and devices, and removal of the silt fence, erosion bales, and other erosion control devices once vegetative cover has been established satisfactory to the Engineer and Owner, and all equipment, materials, tools, machinery, labor, and construction means and methods to properly install and maintain Erosion Control Methods and Devices.

1.3 GENERAL

- A. The work under this section consists of providing all work, materials, labor, equipment, and supervision necessary to provide a fully functioning erosion control system as provided in these specifications and on the drawings.

- B. Perform all work in accordance with applicable manufacturer's directions, and all local, state, and federal Codes, Regulations, Laws, and Ordinances.

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Product Data: Submit data on geotextile.

1.5 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution Requirements: Requirements for submittals.

1.6 QUALITY ASSURANCE

- A. Perform all work to the specifications herein. If an item is not clearly specified refer to the following sections in the Standard Specifications by the Wisconsin Department of Transportation:
 - 1. Section 605: Ditch Checks
 - 2. Section 606: RipRap
 - 3. Section 623: Dust Control Surface Treatment
 - 4. Section 628: Erosion Control
 - 5. Section 645: Geotextile Fabrics
- B. Perform all work to the specifications herein. If an item is not clearly specified refer to the Technical Standards for Construction Site Erosion & Sediment Control Standards as published by the Wisconsin Department of Natural Resources.

PART 2 PRODUCTS

- 2.1 All Products to be domestically made, manufactured, produced, and assembled in the United States of America.

2.2 EROSION CONTROL FENCES

- A. Comply with the requirement of Section 628.2.6.1 of the Standard Specifications by the Wisconsin Department of Transportation. Geotextile fabric used shall be backed by industrial polypropylene netting or 18-gauge woven wire fence, in three (3) foot wide rolls, with two-inch (2") x two-inch (2") nominal cross section posts of sufficient length to fully support the 36-inch high fence.

2.3 GEOTEXTILE AND EROSION MAT MATERIALS

- A. Furnish materials in accordance with the Product Acceptability List (PAL) as published by the Wisconsin Department of Transportation.
- B. Furnish materials in accordance with the following sections of the Standard Specifications by the Wisconsin Department of Transportation:

1. Section 606: RipRap
2. Section 628: Erosion Control
3. Section 645: Geotextile Fabrics

2.4 SEDIMENT LOGS

- A. Sediment logs shall be Curlex[®] Sediment Logs[®], as manufactured by American Excelsior Company[®], Type I, II, III, or IV (depending on the field conditions), or pre-approved equal.

2.5 EROSION BALES

- A. Comply with the requirement of Section 628.2.4 of the Standard Specifications by the Wisconsin Department of Transportation. Bales to be either straw or hay, have rectangular surfaces, and be tightly bound with twine string, not wire.
- B. Stakes for bales. Use pieces of plasterer's lath or stakes equivalent thereto, 12 inches in length. Provide stakes for use in bale barriers, two-inch (2") x two-inch (2") x 30" nominal, driven flush with the top of the bale.

PART 3 EXECUTION

3.1 GENERAL

- A. Perform all work in accordance with manufacturer's instruction where these specifications do not specify a higher requirement.
- B. Undertake any and all measures required in the contract or shown on the drawings, or determined necessary by the contractor, or as ordered by the Engineer to protect all adjacent lands, and all ground and surface waters from contamination by the direct and indirect migration of sands, silts, mud, debris, chemicals and other such pollutants from the jobsite through the use of specified materials. Such measures include, but are not limited by enumeration to:
 1. Construction and maintenance of erosion control barriers,
 2. Construction and maintenance of surface runoff diversion channels around the construction site,
 3. Construction and maintenance of temporary and permanent drainage structures and facilities,
 4. Sweeping, shoveling, and other removal of materials from streets and other paved surfaces by hand and/or mechanical methods (but not flushing),
 5. Removal of silts, sediments, and debris which have left the jobsite due to erosion,
 6. Restoration of lands and waters subject to damage by erosion from the jobsite.

3.2 PERMITS AND APPROVALS

- A. Apply for and receive all permits and approvals required for land disturbance activities (including DNR permits for dewatering wells) prior to the commencement of land disturbing activities. Fully comply with all such permit and approval requirements and retain a copy of the approvals and/or approved permits on the jobsite at all times of construction activity.

3.3 EROSION CONTROL FENCES

- A. Conform all work to technical standard 1056, Silt Fence, as published by the Wisconsin Department of Natural Resources.
- B. For specific location of silt fence, refer to Project Plans.
- C. Install as per Section 628.2.6.1 of the Standard Specifications by the Wisconsin Department of Transportation.

3.4 SEDIMENT LOGS

- A. Install as per manufacturer's instructions.
- B. Locate sediment logs on level contours spaced as per manufacturer's instructions.
- C. Turn the ends of the sediment logs up slope to prevent runoff from going around the log.
- D. Stake sediment logs into a two (2) to four (4) inch deep trench with a width equal to the diameter of the sediment log.
 - 1. Drive stakes at the end of each sediment log and spaced four (4) feet maximum on center.
- E. If more than one sediment log is placed in a row, the logs should be overlapped, not abutted.
- F. Remove sediment log once vegetation has been established. Collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

3.5 EROSION BALES

- A. Conform all work to technical standard 1062, Ditch Checks, as published by the Wisconsin Department of Natural Resources.
- B. Erosion bales to be a minimum of three (3) feet in length.
- C. For specific location and type of erosion mat, refer to Project Plans.

- D. Install as per Section 628.2.4 of the Standard Specifications by the Wisconsin Department of Transportation.

3.6 EROSION MAT

- A. Conform all work to technical standard 1053, Channel Erosion Mat, and to technical standard 1052, Non-Channel Erosion Mat, as published by the Wisconsin Department of Natural Resources.
- B. For specific location and type of erosion mat, refer to Project Plans.

3.7 INLET PROTECTION

- A. Conform all work to technical standard 1060, Storm Drain Inlet Protection for Construction Sites, as published by the Wisconsin Department of Natural Resources.
- B. For specific location and type of inlet protection, refer to Project Plans.

3.8 DITCH CHECKS

- A. Conform all work to technical standard 1062, Ditch Check, as published by the Wisconsin Department of Natural Resources.
- B. For specific location and type of ditch checks, refer to Project Plans.

3.9 DUST CONTROL

- A. Conform all work to technical standard 1068, Dust Control on Construction Sites, as published by the Wisconsin Department of Natural Resources.
- B. Dust control to be implemented at the request of the Engineer or Owner.

3.10 DE-WATERING METHODS

- A. Conform all work to technical standard 1061, De-watering, as published by the Wisconsin Department of Natural Resources.
- B. De-watering methods to be used whenever water from the trench is pumped out of it.

3.11 GRADING AND EARTHWORK MEASURES

- A. Install temporary or permanent erosion control measures prior to any onsite grading or land disturbances.
- B. Clear only those areas designated for the placement of improvements or earthwork before placement of the final cover. Perform stripping of vegetation, grading, excavation, or other land disturbing activities in a logical sequence and manner which will minimize erosion. If possible, schedule construction for times of the year when erosion hazards are minimal.

- C. Do not clear the site of topsoil, trees, and other natural ground covers before the commencement of construction. Retain natural vegetation and protect until the final ground cover is placed.
- D. Do not locate any soil or dirt piles which will remain in existence for more than seven (7) consecutive days, whether to be worked during that period or not, within 25 feet of any roadway, parking lot, paved area, or drainage structure or channel (unless intended to be used as part of the erosion control measures. Provide temporary stabilization and control measures (seeding, mulching, tarping, erosion matting, barrier fencing, etc.) for the protection of disturbed areas and soil piles which will remain unworked for a period of more than 14 consecutive calendar days.

3.12 DRAINAGE MEASURES

- A. Provide drainage measures which contain the increased runoff resulting from development of the site and/or disturbances to the natural vegetative cover, during and after the construction activity. Convey drainage to the nearest adequate public facility. Do not discharge water in a manner which will cause erosion or sedimentation of the site or receiving facility.
- B. Protect drain inlets with erosion control barriers of straw or hay bales, silt fencing, filter baskets, or other equivalent methods approved by the engineer which provide the necessary erosion protection.
- C. Minimize water runoff and retained on-site wherever possible so as to promote percolation of surface water. Do not discharge water in a manner which will cause erosion or sedimentation of the site or receiving facility.
- D. Undertake site dewatering in a manner to minimize the pumping of sediments and discharge to a sedimentation basin or sedimentation vessel in a manner so as to minimize the discharge of sediments. Do not discharge water in a manner which will cause erosion or sedimentation of the site or receiving facility.

3.13 TRACKING AND SEDIMENTATION CONTROL MEASURES

- A. Provide each site with measures to prevent the tracking of sediment from the site onto public or private roadways, parking lots, and paved areas. Such measures shall include:
 - 1. Prohibiting construction activities which are off of paved, graveled, or stabilized surfaces during periods of precipitation and wet soils.
 - 2. Each site shall have adequate access drives and parking areas of sufficient width, length, and wearing surface.
 - 3. Access roads and parking areas receiving more than five (5) vehicle trips per hour shall be graveled or paved.
 - 4. Access roads receiving more than 15 vehicle trips per hour shall be equipped with graveled or paved areas of adequate size and clean surface for the removal of dirt, mud, sediments, and other debris by sweeping, washing, or other methods before the vehicle enters adjacent roadways, parking areas, or paved surfaces.
 - 5. Wash water shall be discharged to sedimentation basins, sedimentation vessels, or other such control areas.
 - 6. Conform all work to technical standard 1063, Stone Tracking Pad and Tire Washing, as published by the Wisconsin Department of Natural Resources.

3.14 CLEANING AND DISPOSAL

- A. Remove surplus excavation materials from the site immediately after rough grading. The disposal site for the surplus excavation materials shall also be subject to these erosion control requirements.
- B. Immediately and completely remove by scraping, sweeping, shoveling, or other such method (except flushing), any sediment reaching a public or private roadway, parking lot, sidewalk, or other paved area and which constitutes a hazard to traffic or which may be further scattered by traffic. Completely remove any accumulations not requiring immediate attention at least once daily at the end of the work day.
- C. Frequently dispose of all waste and unused construction materials in licensed solid waste or wastewater facilities. Do not bury, dump, or discharge, any garbage, debris, cleaning wastes, toxic materials, or hazardous materials on the site, on the land surface or in detention basins, or otherwise allow materials to be carried off the site by runoff onto adjacent lands or into receiving waters or storm sewer systems.

3.15 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2:1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.
 - 2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 02924 at 75 percent of permanent application rate with no topsoil.
 - 3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 02924 permanent seeding specifications.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.16 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 - Execution Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.17 CLEANING

- A. Section 017000 - Execution Requirements: Requirements for cleaning.
- B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- C. Do not damage structure or device during cleaning operations.
- D. Do not permit sediment to erode into construction or site areas or natural waterways.
- E. Clean channels when depth of sediment reaches approximately one-half channel depth.

END OF SECTION

SECTION 330110 - WATER TANK DISINFECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Water tank disinfection.
 - 2. Bacteriological testing.
- B. Related Sections:
 - 1. Section 099713 – Interior Wet Area Abrasive Blast and Coating.
 - 2. Section 099714 – Interior Dry Area Spot Repair and Coating.
 - 3. Section 099715 – Exterior Area Abrasive Blast and Coating.
 - 4. Section 331617 - Water Storage Tank – Structural Modifications & Repairs.

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. Water Tank Disinfection:
 - 1. Basis of Measurement: Incidental to the Project.
Basis of Payment: Includes cleaning and proper surface preparation for completion of disinfection; testing; DNR approval; and all materials, equipment, tools, machinery, labor, and construction means and methods necessary to the complete the Water Tank Disinfection in place and ready for use.

1.3 REFERENCES

- A. American Water Works Association:
 - 1. AWWA C652 - Disinfection of Water Storage Facilities.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Disinfection Procedure: Submit procedure description, including type of disinfectant, and calculations indicating quantities of disinfectants required to produce specified chlorine concentration in accordance with AWWA C652-92, Method 2.
- C. Test Reports: Indicate results of bacteriological and residual chlorine laboratory test reports.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with AWWA C652-92, Method 2.

- B. Perform Work in accordance with the requirements of Sections 810.09(4) and 811.64(17) of the Wisconsin Department of Natural Resources codes prior to placement into service.
- C. Maintain one copy of "bacteriologically-safe sample" document on site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Store disinfectants in cool, dry place away from combustibles such as wood, rags, oils and grease.
- C. Handle disinfectants with caution; protect skin and eyes from contact; avoid breathing vapors; wear gloves, aprons, goggles, and vapor masks.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Furnish personnel working inside tank during disinfection with equipment to comply with Federal and State regulations for work conducted in hazardous atmosphere.
- B. Neutralize disinfectant solution before disposal.
- C. Legally dispose of disinfection solution off Project site.
- D. Repair damage caused by disinfectant solution and disinfection procedures.

PART 2 PRODUCTS

2.1 DISINFECTANTS

- A. Chlorine Forms: In accordance with AWWA C652, Section 3.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Conduct inspection of tank interior before beginning disinfection.
 - 1. Verify tank is clean and free of polluting materials.
 - 2. Verify tank pipe and vent connections are properly made and clear of obstructions.

3. Verify paint is thoroughly cured in accordance with paint manufacturer's instructions.
- C. Upon completion of the coating and confirmation that the coating has been properly cured, the inside of the tank shall be thoroughly cleaned as specified and disinfected by the use of chlorine applied in a concentrated solution, sprayed over the entire surface in accordance with the specifications of the Wisconsin Health Department, and AWWA C652-11, section 4.3: Chlorination Method 2.
- D. The disinfected surfaces shall remain in contact with the chlorine solution for at least 30 minutes. Then all disinfected surfaces, including the inlet and outlet piping and any drain piping shall be washed and purged with clean water. Remove all chlorine solution and purging water from the interior. Following this, potable water shall be admitted.
- E. The Owner shall take a bacteria test of the water after disinfecting. If the water is considered not safe after testing, additional disinfecting and testing shall be performed by the Contractor at his expense until the tank is tested safe for use as part of a potable water supply system.
- F. The Owner shall take a taste and odor test of the water after disinfecting to detect the presence of any volatile organic compounds (VOC's) imparted by the coating. If the water is not considered safe or acceptable after testing further work shall be performed by the Contractor at his expense until the tank is tested safe and acceptable for use as part of a potable water supply system.

3.2 PREPARATION

- A. Protect aquatic life and vegetation from damage from disinfectant solution purged from tank.

3.3 APPLICATION

- A. After the interior paint has fully cured, and after seven (7) days have elapsed since the final coat had been applied, the Contractor shall disinfect the tank in accordance with AWWA Standard C652-92, Method 2 and the requirements of Sections 810.09(4) and 811.64(17) of the Wisconsin Department of Natural Resources codes prior to placement into service.

3.4 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Owner to collect two (2) consecutive water samples, taken 24 hours apart, from filled tank for bacteriological analysis in accordance with Section 4.4 of AWWA C652; take inlet and outlet water samples.
- C. Test water samples in accordance with State Health Standards for potable water.

- D. When water samples fail to meet State Health Standards for potable water, contractor to perform the following corrective measures until water quality conforms to State Health Standards:
1. Inlet and Outlet Water Sample Failure: Eliminate source of contamination in water supply, repeat disinfection, and retest water quality.
 2. Outlet Water Sample Failure: Repeat disinfection, and retest water quality.

END OF SECTION 330110

SECTION 331617 - WATER STORAGE TANK – STRUCTURE MODIFICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Water Tank Structure Modifications.
2. Permanent Sump Pump and Associated Piping.

B. Related Sections:

1. Section 099713 – Interior Wet Area Abrasive Blast and Coating.
2. Section 099714 – Interior Dry Area Spot Repair and Coating.
3. Section 099715 – Exterior Area Abrasive Blast and Coating.
4. Section 330110 - Water Tank Disinfection.
5. Section 331620 – Circulating Pump.
6. Appendix A – Elevated Water Tank Inspection Report.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Structure Modifications:

1. Basis of Measurement: By Lump Sum.
2. Basis of Payment: Includes all materials, equipment, tools, machinery, labor, and construction means and methods necessary for the Water Storage Tank structure modifications as specified, listed, and referenced in the Elevated Water Tank Inspection Report in order to complete the Structure Modifications for the Water Storage Tank in service and ready for use.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate structure locations, elevations, piping, sizes and elevations of penetrations, and structure components.
- C. Product Data: Submit component construction, features, configuration, and dimensions.

1.4 QUALITY ASSURANCE

- A. Work and materials shall conform to the applicable requirements of the Wisconsin Department of Natural Resources code.

1.5 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five (5) years of documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.

PART 2 PRODUCTS AND INSTALLATION

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 WATER TANK STRUCTURE MODIFICATIONS

- A. The Contractor shall complete the water tank structure modifications as specified below and as listed in the Elevated Water Tank Inspection Report.
- B. No welding over coated steel. All areas that require welding are to be abrasive blasted before any welding is started.
 - 1. Seal weld the following joints. Seal welding these joints will prevent rust streaking and corrosion in areas inaccessible to paint:
 - a. The overlap seam between the dollar plate and roof plates.
 - b. The inside joint between the drywell tube and the dollar plate.
 - c. The inside of the dollar plate butt joint.
 - d. The inside joint between the wet access manway and the dollar plate.
 - e. The inside joint between the roof vent and the dollar plate.See photos 2 through 5 of the Elevated Water Tank Inspection Report.
 - 2. Urethane/epoxy caulk the following joints:
 - a. Both sides of the seam between the compression ring and the dollar plate.
 - b. Both sides of the intermittently welded seam of the roof rafters.
 - c. The roof plate lap joints (adjacent to the roof rafters).
 - d. The annular space where the roof connects to the shell.See photos 2 through 4 of the Elevated Water Tank Inspection Report.
 - 3. Weld all bolted roof-framing connections with 3/16-inch fillet weld all around to seal. After welding, remove all nuts and bolts. This will conform to AWWA D100-11. See photo 4 of the Elevated Water Tank Inspection Report.

4. Remove the existing cable safety climb device from the interior wet ladder. Install an anchor point and Self-Retracting Life-Line (SRL) to allow for safe access while ascending and descending the ladder. Refer to Drawing No. 26 and photo 7 of the Elevated Water Tank Inspection Report.
5. Seal weld the joint between the stiffener rings and the drywell tube to comply with AWWA D100-11. See photos 8 and 9 of the Elevated Water Tank Inspection Report.
6. Remove approximately ten (10) rigging tabs from the bowl stiffener ring and bowl and grind smooth the area as described in Appendix C of the Elevated Water Tank Inspection Report. These tabs were required during the erection phase and are no longer needed. See photos 15 and 16 of the Elevated Water Tank Inspection Report.
7. Install a davit arm on the existing bowl pressure manway. See Drawing No. 37a and photo 18 of the Elevated Water Tank Inspection Report.
8. Replace the gasket on the 24-inch diameter round bowl manway. See photo 18 of the Elevated Water Tank Inspection Report.
9. Install two (2) bars on top of the fill pipe to hinder materials from falling into the pipe. See photo 20 of the Elevated Water Tank Inspection Report.
10. Replace approximately five (5) existing light fixtures with new LED fixtures similar to the Lithonia Lighting OLVTWM. See photo 22 of the Elevated Water Tank Inspection Report.
11. Replace the cable style safety climb device on the drywell tube ladder with a new OSHA approved cable style climb device. The climb device is currently painted in violation of OSHA regulations. See photos 22 through 24, 27, 29, and 36 of the Elevated Water Tank Inspection Report.
12. Install cable style safety climb devices on all remaining ladders in the pedestal to comply with OSHA regulations. See photos 31, 35, 37 through 40, and 46 of the Elevated Water Tank Inspection Report.
13. Install approximately eight (8) half-moon cable brackets inside the drywell tube, equally spaced, for the attachment of electrical and coaxial cables. Remove all unused clamps, brackets, etc. Move cables and conduit from the side of the ladder to the cable brackets to bring the ladder into OSHA compliance. See Drawing No. 4a and photos 21 through 29 of the Elevated Water Tank Inspection Report.
14. Install a new 24-inch diameter, pressure style manway and step-off platform in the drywell tube, approximately 90-degrees from the bowl manway. Refer to Drawing No. 37a and 37c and photo 29 of the Elevated Water Tank Inspection Report.
15. Install a new stainless-steel bowl drain valve similar to those designed by General Construction or Babco Valves. Include a clear, rigid, high pressure hose connected to the overflow pipe. Include the installation of a new heavy-walled coupling in the bowl. Install a hand hole in the drywell tube for access to the new valve from the drywell tube ladder. See Drawing No. 33 and photo 35 of the Elevated Water Tank Inspection Report.
16. Install approximately ten (10) pedestal stand-off brackets in the pedestal at 8-foot maximum spacing for the mounting of the electrical and coaxial cables.

- Move the electrical conduits along the ladders to the stand-off bracket to bring the ladders into OSHA compliance. See Drawing No. 4b and photos 39, 40, 44, and 46 of the Elevated Water Tank Inspection Report.
17. Seal weld approximately five (5) lap seams on the dry side of the drywell tube. Refer to photos 24 and 29 of the Elevated Water Tank Inspection Report.
 18. Seal weld the top side seams of the plates making up the condensate ceiling floor and remove rigging tab. See photos 39 and 41 of the Elevated Water Tank Inspection Report.
 19. Install a port in the center of the condensate platform floor and bottom of the drywell tube to facilitate containment. See Drawing No. 45 and photos 36, 41 and 46 of the Elevated Water Tank Inspection Report.
 20. Verify the condensate platform drain is free from obstruction. Replace the drainpipe if necessary. See photos 41 and 42 of the Elevated Water Tank Inspection Report.
 21. Replace the existing foil wrap around the fill pipe insulation with a protective aluminum jacket. Replace any insulation damaged in the process. See photos 38 through 41, 43 through 46, and 49 and 50 of the Elevated Water Tank Inspection Report.
 22. Replace the non-functioning sample taps in the valve pit and pump house with new taps per Wisconsin DNR requirements. See photos 49 and 50 of the Elevated Water Tank Inspection Report.
 23. Replace the light fixture in the valve pit with a new LED fixture similar to the Lithonia Lighting OVTWM.
 24. The sump pump in the valve pit does not appear to be functional. Replace the pump with a new commercial grade sump pump. See photo 51 of the Elevated Water Tank Inspection Report.
 25. Replace the drywell tube manway lid with an aluminum style lid. Install a stop chain connecting the manway cover at the top of the drywell tube to the manway curb and locking mechanism on the dry side. See Drawing No. 11 and photos 52 through 54 of the Elevated Water Tank Inspection Report.
 26. Install a padlock on the roof access manway. Replace the handle on the roof access manway cover to accept a lock. See photos 21 and 22 of the Elevated Water Tank Inspection Report.
 27. Install an anchor point on the exterior (roof side) of the drywell tube for securing safety harnesses with lanyards during egress and transitioning from the drywell tube safety climb device to the tower roof. Refer to Drawing No. 25 and photo 52 of the Elevated Water Tank Inspection Report.
 28. Replace the tank vent/finial with a 24-inch diameter aluminum pressure pallet style vent, similar to the one shown on Drawing No. 8a of the Elevated Water Tank Inspection Report. See photos 52 and 53 of the Elevated Water Tank Inspection Report. The new vent and vent screen design will meet AWWA D100-11 and local Health Department Regulations. The removable top will improve ventilation, provide access to the tank interior during reconditioning, and aid in compliance with OSHA Confined Space Entry Requirements.
 29. Install two (2) 24-inch diameter, hinge covered, roof ventilation manways, approximately 120 degrees from the existing roof manway, set outside the new

- handrail. See photos 52 and 55 of the Elevated Water Tank Inspection Report. This will provide additional ventilation during the interior surface preparation and coating and aid in compliance with OSHA Confined Space Entry requirements. See Drawing No. 10a of the Elevated Water Tank Inspection Report.
30. Install an 18-foot (diameter) pipe style roof handrail conforming to OSHA regulations to enclose the existing roof manway(s) and the vent/finial. The new handrail system shall be designed to accommodate antenna mounting loads. Provide schedule 80 pipe with posts at 5-foot maximum centers. See Drawing No. 15b and photos 52 through 56 of the Elevated Water Tank Inspection Report. Install a non-skid walkway within the area of the new hand railing.
 31. Relocate the antennas to the new handrail and remove all existing antenna mounts. Grind off bracket welds and seal weld any holes remaining per Appendix C of the Elevated Water Tank Inspection Report. See photos 52 through 55 of the Elevated Water Tank Inspection Report.
 32. Remove the non-functional bird deterrent devices from the roof. See photo 55 of the Elevated Water Tank Inspection Report.
 33. Replace the double aviation light with a new double LED style aviation light similar to Hughey & Phillips L-810 and relocate to a mount on the newly installed handrail. Remove the existing mount and repair surface as required. Modify/replace electrical conduits and wiring as necessary. See photos 52 through 54 of the Elevated Water Tank Inspection Report.
 34. Install four (4) 4-inch diameter couplings at the top of the drywell tube. Relocate existing coaxes upon completion of painting. Install cover plates and seal weld over all unused and abandoned coaxial cable penetrations. See Drawing No. 5a and photos 52 and 53 of the Elevated Water Tank Inspection Report. Remove all unused cables, brackets, etc.
 35. Replace the steel double doors in the base of the pedestal with insulated double doors. Door frame to be blasted, primed, and coated to remove existing corrosion conditions. See photos 47 and 61 of the Elevated Water Tank Inspection Report.
 36. Install an overflow pipe screen retainer and screen meeting Wisconsin DNR regulations. Use a corrosion resistant, heavy-gauge, No. 4 mesh screen. See Drawing No. 54 and photos 62 and 63 of the Elevated Water Tank Inspection Report.
 37. Surface Repairs
 - a. All erection scab marks shall be removed and repaired by welding and grinding to restore the plate to a smooth, flush condition. All weld spatter shall be removed by grinding in conformance with the requirements of Appendix C. All weld defects shall be removed and repaired by welding and grinding in conformance with the requirements of Appendix C, NACE Weld Preparation Designation "C". Included in this work but not limited to are the radius grinding of all sharp edges on the overflow weir box, inlet/outlet pipe, painters rigging brackets,

- b. The repaired areas shall conform to the surface preparation requirements of Article 4.0 Appendix C, NACE Standard SP0178-2007, NACE Weld Preparation Designation "C".

2.3 STRUCTURE MODIFICATIONS MATERIALS

A. Epoxy or Urethan Caulk:

- 1. The tank interior or exterior epoxy caulking requirements shall be with products manufactured by Tnemec Company, Inc., Sika Corporation, or approved equal as outlined below.
 - a. Tnemec Company, Inc.
 - 1) Tnemec Surfacing Epoxy Series 215
 - b. Sika Corporation.
 - 1) Sika Elastomeric Sealant, moisture-cured, 1-component non-sag Sikaflex® - 1A

B. Gasket Material:

- 1. For manways that use a flat style gasket, the gasket is ¼-inch thick and use either a Neoprene or an EPDM material with a durometer hardness of 50 on the Shore A scale.
- 2. For manways that require a ¾-inch, round, solid core, 24-inch diameter gasket, material shall be Buna-N Rubber with a durometer hardness of 50 on the Shore A scale. A possible source of this material is Power Process Equipment, Inc., Minneapolis, MN (952) 937-1000.
- 3. For flat cover ventilation manways, roof vents and similar applications use a flat style gasket that is 1/8-inch thick and use either a neoprene or an EPDM material with a durometer hardness of 50 on the Shore A scale.

C. Inlet/Outlet Piping Aluminum Jacket:

- 1. Install around all insulation a 0.16-inch thick aluminum frost jacket. Frost jacket shall be Childers Lock-On Fabricated Jacketing System or approved equal. Sections of the aluminum frost jacket shall be secured in place with ½-inch wide stainless-steel bands, 2 bands per 36-inch section of frost jacket. The stainless-steel bands shall be securely fastened by stainless steel screws or rivets in a manner acceptable to the Engineer. The Contractor shall furnish his proposed attachment procedure to the Engineer for approval prior to commencing work.

D. Exterior Pedestrian Doors:

- 1. Replace the existing pedestrian double door with two (2) 36-inch x 80-inch commercial hollow steel doors, 1 ¾-inch thick minimum 16 gauge and polystyrene insulation. Provide the new doors, prime painted, dead bolt lock, closures and Schlage lock keyed per Owner requirements. Door to be AMWELD 15LE or approved equal, with three (3) Stanley hinges F179 x NRP x USP and two

(2) Pemko Automatic Door BTM 412CPKL x 36 and shall open outward. Provide weather-stripping for weather tight fits, thresholds and door sweeps. Doors shall be painted to conform to the exterior paint system.

E. Aviation Red Obstruction Lighting System:

1. Replace the existing aviation obstruction light with a new steady burning LED, double obstruction light fitting, conforming to FAA AC 150/5345-43G, type L-810 LED or Military Specification L-7830. The new lights/lamps shall be enclosed in an aviation red globe and include a new photoelectric cell.
2. Approved Equipment. FAA Advisory Circular AC 150/5345-53C lists the approved airport lighting equipment and manufacturers qualified to supply their product in accordance with the specification requirements. The products of other manufacturers' may be used provided it meets the or equal requirements of the specifications, is submitted and approved by the Engineer.

F. Sump Pump:

1. The Contractor shall supply and install a permanent sump pump in the existing pit within the interior of the water storage tank. The Contractor shall also supply and install the associated piping from the sump pump into the overflow pipe and the corresponding check valve to finish installation of the sump pump in place and ready for use.
2. The sump pump shall be 120V with a minimum of 1-1/2 hp. The pump shall displace a minimum 15 gpm at 20 feet of head. An attached pressure or float switch is required.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.

3.2 STRUCTURE MODIFICATION REPAIRS

- A. Areas to be repaired are described in Specification Section 331617, Part 2 – Water Tank Structure Modifications, 2.2.
- B. All repairs by welding shall be ground smooth or radiused in conformance with the requirements of Appendix C of the Elevated Tank Inspection Report and as directed by the Engineer. These will be welded by a skilled, certified welder under the direction of

the Engineer. The welders shall be certified in conformance with ASME Section IX and shall submit current copies of the welder's certificates to the Engineer and the Owner. The repaired areas shall conform to the surface preparation requirements of Section 4 Appendix C, NACE Standard SP0178-2007, NACE Weld Preparation Designation "C" of the Elevated Water Tank Inspection Report.

- C. No welding over coated steel surfaces is permissible. The contractor is responsible to adequately remove all coatings before welding. All areas that require welding are to be abrasive blasted before any welding is started.

- D. Welding Procedures:
 - 1. All field welding shall be in accordance with ASME Section VIII, Division 1 and AWWA D100-11.
 - 2. The location, type, size, and length of all welds shall be as shown on approved shop drawings. All field welds shall be of the manual shielded metal arc type. Welding shall not be done when the surface temperature is lower than 35 degrees Fahrenheit, when surfaces are wet, or when welders are exposed to inclement conditions.
 - 3. The contractor shall submit all welding procedures to the engineer for approval prior to the preconstruction meeting.
 - 4. The Contractor can use alternate design details to those shown in Appendix B of the Elevated Water Tank Inspection Report. However, the Contractor must submit all shop drawings to the Engineer for approval.
 - 5. Certification Tests:
 - a. Contractor shall, upon request from Owner, provide certification in writing that all welds are in conformance with this specification and that any weld failure, defect, and/or all damage relating therefrom will be repaired or replaced to the satisfaction of Owner at no cost to Owner. Owner reserves the right to have all welds tested. Tests will be paid for by Owner; however, in the event that work is defective, Contractor shall pay for the tests and shall replace all faulty work with work that complies with this Specification.

- E. Any additional repair work uncovered by the Contractor or Engineer during reconditioning shall not be initiated until duly authorized and executed change orders issued and signed by the Owner and accepted and signed by the Contractor are completed. Refer to General Conditions for details involving increases or decreases in the amount of work

3.3 ELECTRICAL

- A. General Description of Electrical Work:
 - 1. Electrical service for installation of the tank circulation pump.
 - 2. Electrical for completion of lighting.

- B. General Instructions for Electrical Contractor: Contractors quoting electrical equipment and construction shall be responsible for meeting the requirements of all sections of these specifications as they relate to the furnishing and installation of electrical equipment and work. All work performed under this contract shall conform to these specifications and the latest editions of the National Electrical Code (NFPA 70), the National Electrical Safety Code and the South Dakota State Building Code. Where it applies, all equipment and materials shall be new and shall have the Underwriters Laboratories (UL) label: and shall conform to ANSI, ICEA, IEEE and NEMA standards. All work shall be performed in a neat, skillful manner by skilled electricians and shall be consistent with the high standards of the electrical trade. Each electrician shall be skilled and trained in the particular tasks he is to perform.
- C. Grounding: This section includes a grounding electrode and all system and equipment grounding. All wires used for grounding shall be Class B stranded copper: either bare or with green insulation. Grounding wire size shall be as required by electrical Code. Grounding rod shall be 3/4 inch by 10 feet copperweld. Contractor shall provide all connections and terminators required for ground connections. Tool-compressed connectors and lugs shall be used except for connections to the bus bars which may be made with Burndy Type QGFL bar taps. The contractor shall furnish and install one (1) grounding electrode (ground rod) near the panelboard and shall connect it to the ground bus of the panelboard. An equipment grounding conductor shall be installed with each branch circuit. Conductor shall be connected to the equipment ground or to the ground bus. The ground resistance of the grounding electrode shall be measured before it is connected to the panelboard ground bus. A final ground resistance measurement shall be made after the complete grounding system has been connected.
- D. Rigid Metal Conduit. This section includes UL-Rigid Metal Electrical conduit which is to be furnished and installed by the contractor. All wiring shown on the plans and specified herein shall be installed in conduit unless indicated otherwise. Conduit shall be rigid steel, which is galvanized inside and outside, and UL listed (UL-6). Conduit shall have threaded couplings and fittings only; no set screw, gland type or split fittings shall be used except as specifically allowed in the specifications. Type FS or FD cast device boxes shall be used for all small boxes. Large pull boxes shall be fabricated from code gauge steel which is galvanized after fabrication. Boxes shall be NEMA 1 enclosures with hinged, gasketed cover which is held closed with 2-point or 3-point latch or with a minimum of 3 screws in the side opposite the hinge. Boxes shall not have removable knockouts. Boxes shall be sized in accordance with the National Electrical Code with enough capacity to add to each side at least two (2) conduits of the same size as the largest conduit which enters the box. Conduit terminations to terminal boxes, cabinets and enclosure shall have double lockouts and O-Z/Gedney Type B insulated bushings. Expansion fittings shall provide for 4-inch conduit movement, Appleton "XJ", Crouse Hinds "XJ", O-Z/Gedney Type "AX" or approved equal and shall have an external bonding jumper. Liguidtight flexible metal conduit shall have a PVC jacket, and sizes up through 1-1/4 inch shall have a built-in continuous copper ground; Amer-tite Type UL, Anaconda "Sealtite" Type U. A., Electri-

Flex "Ligatite" Type L. A., or approved equal. Conduits shall be supported at proper intervals with trapeze or bracket type hangers constructed of galvanized Unistrut, Power-strut, or approved equal. The contractor shall supply and install support brackets for support of conduit. Conduit and boxes shall not be attached to or suspended from equipment or ladder side rails.

3.4 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 – Execution and Closeout Requirements: Field inspecting, testing, adjusting, and completion.

END OF SECTION 331617

SECTION 331619 - TEMPORARY PORTABLE PRESSURE WATER STORAGE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary Portable Pressure Water Storage and Associated Piping.

B. Related Sections:

1. Section 330110 - Water Tank Disinfection.
2. Appendix A – Elevated Water Tank Inspection Report.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Temporary Portable Pressure Water Storage:

1. Basis of Measurement: By Lump Sum.
2. Basis of Payment: Includes the installation of connecting piping, controls, electrical, and other appurtenances necessary to complete the installation and maintain the Temporary Portable Pressure Water Storage System during the elevated hydropillar repainting and repairs; protection and security of the water storage system; and all materials, equipment, tools, machinery, and labor necessary to supply, install, and maintain a Temporary Portable Pressure Water Storage System located at Well #3 in Tower Park.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate structure locations, elevations, piping, sizes and elevations of penetrations, and structure components.

C. Product Data: Submit portable pressure water storage system component construction, location(s), features, configuration, capacities, water pressures, controls, and dimensions.

1.4 QUALITY ASSURANCE

A. Work and materials shall conform to the applicable requirements of the Wisconsin Department of Natural Resources code.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing work of this section with minimum five years of documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.

PART 2 PRODUCTS AND INSTALLATION

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 EXISTING WATER SYSTEM CONDITIONS

- A. Existing Municipal Wells:
 - 1. Existing Water System
 - a. Average Daily Water Usage – 260,000 gpd.
 - b. Current Static Pressure at Tower Base – 52 psi.
 - 2. Well #3:
 - a. Location – 907 Ridge Street (Tower Park)
 - b. Current Capacity – 300 gpm
 - 3. Well #4:
 - a. Location – 529 Church Street
 - b. Current Capacity – 500 gpm

2.3 PORTABLE PRESSURE WATER STORAGE SYSTEM

- A. The Contractor shall supply and install a temporary portable pressure water storage system for supply of the City's municipal water system during the elevated tank repainting and repairs.
- B. The temporary portable pressure water storage system shall be provided with volume capacity to allow the municipal well pumps to operate at three (3) pump cycles per hour at average water usage. The Contractor will provide a submittal for the pressure water storage system to be utilized for approval prior to installation.
- C. The temporary portable pressure water storage system will be provided to operate the City's municipal water system within the normal static pressure under normal system conditions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

3.2 PORTABLE PRESSURE WATER STORAGE SYSTEM

- A. The Contractor shall supply and install a temporary portable pressure water storage system for supply of the City's municipal water system during the elevated tank repainting and repairs.
- B. The temporary portable pressure water storage system shall be provided with volume capacity to allow the municipal well pumps to operate at three (3) pump cycles per hour at average water usage. The Contractor will provide a submittal for the pressure water storage system to be utilized for approval prior to installation.
- C. The temporary portable pressure water storage system will be provided to operate the City's municipal water system within the normal static pressure under normal system conditions.
- D. The Contractor will be responsible for maintenance and operation of the pressure water storage system during the elevated tank repainting and repairs. The Contractor shall also be responsible for the removal of the water storage system and restoration of site(s) to original condition.

3.3 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 – Execution and Closeout Requirements: Field inspecting, testing, adjusting, and completion.

END OF SECTION 331619

SECTION 331620 - CIRCULATING PUMP

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Circulating Pump and Associated Piping.

B. Related Sections:

1. Section 099713 – Interior Wet Area Abrasive Blast and Coating.
2. Section 099714 – Interior Dry Area Spot Repair and Coating.
3. Section 099715 – Exterior Area Abrasive Blast and Coating.
4. Section 330110 - Water Tank Disinfection.
5. Section 331617 – Water Storage Tank – Structure Modifications.
6. Appendix A – Elevated Water Tank Inspection Report

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Circulation Pump: **(Alternate 'A')**

1. Basis of Measurement: By Lump Sum.
2. Basis of Payment: Includes the supply and installation of a Circulating Pump at the base of the fill/drain pipe and the piping up the interior of the fill/drain pipe into the wet interior of the water storage tank; bracing for the piping; welding the bracing equipment; the removal and replacement of the existing insulation; completely sealing the resultant holes in the fill/drain pipe by welding techniques; complete electrical wiring; and all materials, equipment, tools, machinery, labor, and construction means and methods necessary for completion of the Circulation Pump in place and ready for use.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate structure locations, elevations, piping, sizes and elevations of penetrations, and structure components.
- C. Product Data: Submit component construction, features, configuration, and dimensions.

1.4 QUALITY ASSURANCE

- A. Work and materials shall conform to the applicable requirements of the Wisconsin Department of Natural Resources code.

1.5 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five years of documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.

PART 2 PRODUCTS AND INSTALLATION

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 CIRCULATING PUMP AND ASSOCIATED PIPING

- A. The Contractor shall supply and install a 1 ½ horsepower Red Lion circulating pump, or equal. The circulating pump shall be installed at the base of the fill/drain pipe. The Contractor shall install 1 ¼" Schedule 40 black steel pipe up the interior of the fill/drain pipe and shall terminate the black steel pipe approximately 10 feet into the wet interior of the water storage tank. The Schedule 40 black steel pipe shall be braced by welding steel clips to the interior side wall of the fill/drain pipe about every 20 feet. The existing insulation shall be removed in the area where the brace is to be installed and a small access hole shall be cut into the fill/drain pipe. After installation, the small holes must be welded shut and completely sealed watertight, and the insulation replaced. The contractor shall also be responsible for the electrical wiring of the pump to finish installation of the circulating pump in place and ready for use.

2.3 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that items provided by other sections of Work are properly sized and located.

2.4 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements, 01700 - Execution Requirements: Field inspecting, testing, adjusting, and balancing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.

3.2 CIRCULATION PUMP INSTALLATION

- A. The Contractor shall supply and install a circulation pump in the within the base interior of the existing water storage tank. The Contractor shall also supply and install the associated piping, insulation, and corresponding isolation valving for completion of the circulation pump in place and ready for use.

3.3 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 – Execution and Closeout Requirements: Field inspecting, testing, adjusting, and completion.

END OF SECTION 331620



SECTION 331621 - PRESSURE WASHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pressure washing COR-TEN hydropillar water tank column.
2. Containment.

B. Related Sections:

1. Section 099715 – Exterior Area Abrasive Blast and Coating.
2. Appendix A – Elevated Water Tank Inspection Report.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. COR-TEN Column Pressure Washing:

1. Basis of Measurement: By Lump Sum.
2. Basis of Payment: Includes the pressure washing and cleaning of the COR-TEN column on the elevated hydropillar water storage tank; supply of cleaning chemicals as required; containment; cleanup; and all materials, equipment, tools, machinery, labor, and construction means and methods necessary to complete the COR-TEN Column Pressure Washing in place and ready for use.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate structure locations, elevations, piping, sizes and elevations of penetrations, and structure components.

C. Product Data: Submit portable pressure water storage system component construction, location(s), features, configuration, capacities, water pressures, controls, and dimensions.

1.4 QUALITY ASSURANCE

A. Work and materials shall conform to the applicable requirements of the Wisconsin Department of Natural Resources code.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing work of this section with minimum five years of documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.

PART 2 PRODUCTS AND INSTALLATION

2.1 GENERAL

- A. All Products to be domestically made, manufactured, produced, and assembled in the United States of America.
- B. All materials must conform to NSF/ANSI 61; NSF/ANSI 61 A Max G; and NSF/ANSI 372 Standards-No lead in water system components.

2.2 PRESSURE WASHING SYSTEM

- A. The Contractor shall supply a portable pressure washing system for completion of pressure washing the COR-TEN column on the hydropillar water tank. The Contractor shall remove all organic growth accumulated on the surface of the COR-TEN column. See photos 57 through 64 of the Elevated Water Tank Inspection Report.
- B. The pressure washing will be completed after blasting and recoating has been completed on the tank area above the COR-TEN column.
- C. Contractor shall provide containment for the organic growth and other materials removed during the pressure washing operation. The Contractor will be responsible for the proper disposal of any material removed during the pressure washing operations.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

3.2 PRESSURE WASHING SYSTEM

- A. The Contractor shall supply a portable pressure washing system for completion of pressure washing the COR-TEN column on the hydropillar water tank. The Contractor shall remove all organic growth accumulated on the surface of the COR-TEN column. See photos 57 through 64 of the Elevated Water Tank Inspection Report.
- B. The pressure washing will be completed after blasting and recoating has been completed on the tank area above the COR-TEN column. Sufficient pressure will be

supplied to remove the organic growth and other materials accumulated without damaging the integrity or appearance of the original COR-TEN steel column.

- C. Contractor shall provide containment for the organic growth and other materials removed during the pressure washing operation. The Contractor will be responsible for the proper disposal of any material removed during the pressure washing operations.

3.3 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 – Execution and Closeout Requirements: Field inspecting, testing, adjusting, and completion.

END OF SECTION 331621



Appendix A

Tower Inspection Report

CITY OF MINERAL POINT, WISCONSIN



August
2019

400,000 Gallon Capacity
Tower Number One - Hydropillar



Elevated Water Tank Inspection Report

KLM Project
MN3961

1976 Wooddale Drive, Suite 4 | Woodbury, MN 55125
(651) 773-5111 | Fax (651) 773-5222

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APPENDIX E: Paint Chip Test Results

1.0 PROJECT INFORMATION

KLM Project No.: MN3961 **Customer P. O. Number:** N/A
Customer: City of Mineral Point, Wisconsin **Phone:** 608-987-3442
Street/City/State/Zip: 137 High Street, Mineral Point, WI 53565
Customer Contact: Pat O'Flaherty, Water and Wastewater Superintendent
Tank Owner: City of Mineral Point, Wisconsin **Phone:** 608-642-1698 (cell)
Tank Owner Contact: Bart Nies, P.E., City Engineer
Owner's Tank Designation: Tower Number One - Hydropillar
Tank Description: Hydropillar
Tank Street Location: Intersection of Ridge and Church Streets, Mineral Point, WI 53565
Purpose of Inspection: Condition Assessment
Date of Inspection: August 2, 2019
Inspected By: Devin Severson, NACE #78234 and Gabriel Roeder, NACE #63604
Type of Inspection: KLM Standard ROV Evaluation
Manufacturer: HydroStorage/PDM **Construction Date:** 1985
Serial No.: H4586 **Design Code:** AWWA D100-84
Capacity: 400,000 gallons
Type of Construction: Welded
Tank Diameter: ~49-feet
Height: Overall ~120-feet
Height to: HWL 126'-10" LWL 87'-6"
Type of Access to Tank Interior: Drywell tube to manway on roof
Tank Construction Drawings: Upon request from City
Previous Inspection Records: None available to KLM

EXISTING COATING INFORMATION

	<u>Interior Wet</u>	<u>Interior Dry</u>	<u>Exterior</u>
Date Last Coated	1985	1985	1985
Full or Spot Repair	Full	Full	Full
Coating Contractor	Larson Tank Company	Larson Tank Company	Larson Tank Company
Surface Preparation	Blast	Blast	Blast
Paint System	Unknown	Unknown	Unknown
Paint Manufacturer	Unknown	Unknown	Unknown
Lab Lead Test Paint Chips	Yes	Yes	Yes

City of Mineral Point, Wisconsin

400,000 GALLON CAPACITY
TOWER NUMBER ONE - HYDROPILLAR

2.0|EXECUTIVE SUMMARY

The tank was evaluated on the interior and exterior in conformance with the following:

- a. KLM Engineering, Inc. Proposal.
- b. General guidelines of AWWA Manual M42 Appendix C "Inspecting and Repairing Steel Water Tanks, and Elevated Tanks for Water Storage."
- c. KLM "Procedures and Guidelines for Inspecting Existing Steel and Concrete Water Storage Tanks."
- d. Appendix D Inspection and Evaluation Methods.

2.1|Structural Examination Summary

Based on the inspection data, it appears that some miscellaneous structural modifications and repairs are required. These modifications and repairs serve to bring the tank into compliance with OSHA regulations, AWWA standards, as well as allow for better coating bonding, allow for safer access in and on the tank and, in some cases, removing unnecessary items.

2.2|Coating Evaluation Summary

2.2.1|Lead and Chromium Content Analysis

The total lead and chromium content of the interior and exterior coatings was analyzed. The results in Appendix D show a 0.0066 percent lead content for the interior wet coating, a 0.0058 percent lead content for the exterior dry coating, and a 0.0052 percent content for the interior dry coating. Current State regulations classify neither the interior nor the exterior coatings as lead-based paint. Chromium levels in the test samples indicate levels from 0.0019 to 0.0022 percent chromium. These chromium levels are not high enough to be a concern in the waste streams generated during reconditioning.

2.2.2|Interior Wet Coating

According to Owner provided information, the interior wet coating has not been reconditioned since the tower was originally coated by Larson Tank Company in 1985.

The interior wet coating above the high-water line (HWL) is in fair condition with approximately five (5) percent visible coating failures. The failures are located predominantly in difficult to coat locations such as along roof plate seams, where the roof rafters meet the roof plates, above the compression ring, and around the roof hatches and drywell tube welds. Staining from these failures is visible on many of the surfaces but doesn't affect the coating performance.

Below the HWL, the condition of the interior wet coating is very difficult to assess. A significant amount of scale, staining, sediment, and deposits exist on the tank shell. The estimated coating failures is approximately five (5) percent. Visible failures consist of blistering around random weld seams, pinhole corrosion, and coating delamination. Sediment accumulation is estimated to be one (1) to two (2) yards.

Overall, the interior wet coating is in fair condition. Due to the age of the coating, it is not considered repairable and has far outlived a typical coating service life. Typical service life of a properly maintained coating is generally 20 to 25 years. Due to condition and age, the coating should be replaced within 12 months.

See photos in Appendix A.

2.2.3|Interior Dry Coating

The interior dry coating is also indicated to be original to the tower construction in 1985.

The condition of the interior dry coating is in two different categories. The coating on the interior of the fluted pedestal is in good condition with approximately one (1) percent visible failures. Typical damage due to maintenance activities is about the extent of the failures. While on the other hand, the coating in the drywell tube, on the bowl, and on the platforms is showing signs of significant failure.

The interior dry coating in the drywell tube, on the bowl, and on the platforms is in poor condition with fifteen (15) to twenty (20) percent visible failures. Moderate surface corrosion is occurring as a result of widespread coating cracking and delamination. Pinhole corrosion can also be found on many of these surfaces.

The coating in the drywell tube, on the bowl, and on the platforms should be replaced within the 12 months at the same time as the interior wet coating. The fluted pedestal should be spot repaired in localized areas but does not need replacement until the following reconditioning in twenty years.

See photos in Appendix A.

2.2.4|Exterior Coating

The exterior coating is also indicated to be original to the tower construction in 1985.

The tower pedestal is a unique material not commonly found in water tower construction. It is constructed of weathering steel, or commonly referred to as COR-TEN steel, that is intended to remain uncoated and create a self-developing protective layer of mild corrosion. The mild corrosion layer is what gives the pedestal its current rust coloration. The pedestal steel appears to be in good condition with no repairs required.

The exterior coating on the tank is in poor condition with over twenty percent (20) percent visible failures. Failures consist of top and base coat deterioration, exposed steel substrate in numerous locations resulting in spot corrosion, and widespread fade and chalking due to UV expose. A large amount of bird droppings is covering the roof as well. The original coating is assumed to be around 35 years old and surpassed its normal service life. Due to the coating age and condition, the exterior is not a candidate for repairs or an overcoat. The coating should be removed and replaced in its entirety at the same time as the interior wet and dry coatings, within 12 months.

See photos in Appendix A.

2.3|Repair and Reconditioning Cost Estimate

The costs for structural repairs and replacing the interior and exterior coatings, not including the interior pedestal which can remain, (including the containment) are estimated between \$560,000 and \$600,000. This estimate is based on current pricing and does not include costs for engineering and/or inspection services. For up-to-date competitive bids the project should be bid 9 to 12 months before the scheduled starting date.

An experienced tank-coating contractor with the proper crew and equipment should be able to complete the project in ten (10) weeks. At the time of reconditioning, the tower will need to be drained and remain off-line during interior

structural modifications, abrasive blasting and painting. However, most of the exterior structural modifications can be performed prior to draining, with the tank in-service.

2.4|Remaining Tank Life

Based on the inspection data, if the recommended structural repairs and coating replacement are completed within the next year, the tank will be satisfactory for continued service, provided that it is inspected and maintained regularly.

The tank and coating should first be inspected within the warranty period and every three (3) to five (5) years thereafter. New interior and exterior coatings, if applied and maintained properly, should last at least 20 years.

3.0|RECOMMENDATIONS

The photographs referred to in this section are in Appendix A. All drawings are found in Appendix B. The surface preparation requirements for all repairs as well as the requirements for welding are described in Appendix C. The exterior and interior paint chip lead tests are in Appendix E.

Based on an evaluation of the inspection data, the recommendations are:

3.1|Interior Wet Structural

3.1.1 Seal weld the following joints. Seal welding these joints will prevent rust streaking and corrosion in areas inaccessible to paint.

- a. The overlap seam between the dollar plate and roof plates,
- b. The inside joint between the drywell tube and the dollar plate,
- c. The inside of the dollar plate butt joint,
- d. The inside joint between the wet access manway and the dollar plate,
- e. The inside joint between the roof vent and the dollar plate.

See photos 2 through 5.

3.1.2 Urethane/epoxy caulk the following joints. Seal welding these joints is too cost prohibitive, but the result is similar. Caulking will minimize rust streaking and corrosion in areas inaccessible to paint.

- a. Both sides of the seam between the compression ring and the dollar plate,
- b. Both sides of the intermittently welded seam of the roof rafters,
- c. The roof plate lap joints (adjacent to the roof rafters).
- d. The overlap joint where the roof plates overlap the shell.

See photos 2 through 4.

3.1.3 Weld all bolted roof-framing connections with 3/16-inch fillet weld all around to seal. After welding, remove all nuts and bolts. This will conform to AWWA D100-11. See photo 4.

3.1.4 Remove the existing cable safety climb device from the interior wet ladder. Install an anchor point and Self-Retracting Life-Line (SRL) to allow for safe access while ascending and descending the ladder. Refer to KLM Drawing No. 26. See photo 7.

3.1.5 Remove the existing cathodic protection system from inside the reservoir and in the base of the tower in its entirety. Remove all conduit, cables, junction boxes, etc. Patch any resulting holes according to Appendix C and AWWA D100-11. See photos 14, 19, and 44.

- 3.1.6** Seal weld the joint between the stiffener rings and the drywell tube to comply with AWWA D100-11. See photos 8 and 9.
- 3.1.7** Remove all weld spatter and scab marks below the HWL by air arc gouging, cutting torch, and/or grinding to comply with AWWA D100-11. Prepare the surface per Appendix C. It is estimated that there are 50 man-hours to perform the work. See photos 11 and 12.
- 3.1.8** Remove approximately ten (10) rigging tabs from the bowl stiffener ring and bowl and grind smooth the area as described in Appendix C. These tabs were required during the erection phase and are no longer needed. See photos 15 and 16.
- 3.1.9** Install a davit arm on the existing bowl pressure manway. See KLM Drawing No. 37a and photo 18.
- 3.1.10** Replace the gasket on the 24-inch diameter round bowl manway. See photo 18.
- 3.1.11** Install two (2) bars on top of the fill pipe to hinder materials from falling into the pipe. See photo 20.
- 3.1.12** Install a Grid-Bee GS-9 Submersible Mixer in the tower to provide mixing capabilities that reduce the likelihood and magnitude of ice formation in cold weather and prevent stratification in warm weather, improving water quality and reducing the necessity of chemical additives such as chlorine. Refer to KLM Drawing 63.

3.2|Interior Wet Coating

- 3.2.1** The interior wet coating above the high-water line (HWL) is in fair condition with approximately five (5) percent visible coating failures. The failures are located predominantly in difficult to coat locations such as along roof plate seams, where the roof rafters meet the roof plates, above the compression ring, and around the roof hatches and drywell tube welds. Staining from these failures is visible on many of the surfaces but doesn't affect the coating performance.
- 3.2.2** Below the HWL, the condition of the interior wet coating is very difficult to assess. A significant amount of scale, staining, sediment, and deposits exist on the tank shell. The estimated coating failures is approximately five (5) percent. Visible failures consist of blistering around random weld seams, pinhole corrosion, and coating delamination. Sediment accumulation is estimated to be one (1) to two (2) yards.
- 3.2.3** Overall, the interior wet coating is in fair condition. Due to the age of the coating, it is not considered repairable and has far outlived a typical coating service life. Typical service life of a properly maintained coating is generally 20 to 25 years. The coating should be replaced within the next year. See photos 2 through 13, 15, 16, and 18 through 20.
- 3.2.4** After structural repairs are completed, all the reservoir surfaces should be abrasive blasted to an SSPC-SP-10 Near White Metal Blast and coated with a zinc/epoxy system (similar to the Tnemec Series 91-H20 Hydro-Zinc/Series N140 Pota-Pox Plus Epoxy coatings or Sherwin Williams epoxy equivalent).

3.3|Cathodic Protection System (C.P.)

- 3.3.1** The reservoir has a submerged C. P. system that is not in working condition and should be removed, see 3.1.5. Although it is considered an inexpensive form of interior corrosion protection, it most likely is not required if the coating is applied and maintained properly. The cost of a new Cathodic Protection System is not included in the Engineer's Cost Estimate.

3.4|Interior Dry Structural

- 3.4.1** Replace approximately five (5) existing light fixtures with new LED fixtures similar to the Lithonia Lighting OLVTWM. See photo 22.
- 3.4.2** Replace the cable style safety climb device on the drywell tube ladder with a new OSHA approved cable style climb device. The climb device is currently painted, which does not meet OSHA regulations. See photos 22 through 24, 27, 29, and 36.
- 3.4.3** Install cable style safety climb devices on all remaining ladders in the pedestal to comply with OSHA regulations. See photos 31, 35, 37 through 40, and 46.
- 3.4.4** Install approximately eight (8) half-moon cable brackets inside the drywell tube, equally spaced, for the attachment of electrical and coaxial cables. Remove all unused clamps, brackets, etc. Move cables and conduit from the side of the ladder to the cable brackets to bring the ladder into OSHA compliance. See KLM Drawing No. 4a and photos 21 through 29.
- 3.4.5** Install a new 24-inch diameter, pressure style manway and step-off platform in the drywell tube, approximately 90-degrees from the bowl manway. This will improve the ventilation during reconditioning and bring the tank into compliance with OSHA Confined Space Entry requirements. Refer to KLM Drawing No. 37a and 37c and photo 29.
- 3.4.6** Install a new stainless-steel bowl drain valve similar to those designed by General Construction or Babco Valves. Include a clear, rigid, high pressure hose connected to the overflow pipe. Include the installation of a new heavy-walled coupling in the bowl. This will facilitate cleaning and draining the bowl below the inlet pipe level. Install a hand hole in the drywell tube for access to the new valve from the drywell tube ladder. See KLM Drawing No. 33 and photo 35.
- 3.4.7** Install approximately ten (10) pedestal stand-off brackets in the pedestal at 8-foot maximum spacing for the mounting of the electrical and coaxial cables. Move the electrical conduits along the ladders to the stand-off bracket to bring the ladders into OSHA compliance. See KLM Drawing No. 4b and photos 39, 40, 44, and 46.
- 3.4.8** Seal weld approximately five (5) lap seams on the dry side of the drywell tube. Refer to photos 24 and 29.
- 3.4.9** Seal weld the top side seams of the plates making up the condensate ceiling floor and remove rigging tab. See photos 39 and 41.
- 3.4.10** Install a port in the center of the condensate platform floor and bottom of the drywell tube to facilitate containment during the next reconditioning. See KLM Drawing No. 45 and photos 36, 41 and 46.
- 3.4.11** Verify the condensate platform drain is free from obstruction. Replace the drainpipe if necessary. See photos 41 and 42.
- 3.4.12** Replace the existing foil wrap around the fill pipe insulation with a protective aluminum jacket. Replace any insulation damaged in the process. See photos 38 through 41, 43 through 46, and 49 and 50.
- 3.4.13** Replace the non-functioning sample taps in the valve pit and pump house with new taps per WIDNR requirements. See photos 49 and 50.
- 3.4.14** Replace the light fixture in the valve pit with a new LED fixture similar to the Lithonia Lighting OVTWM.

3.4.15 The sump pump in the valve pit does not appear to be functional. Replace the pump with a new commercial grade sump pump. See photo 51.

3.5|Interior Dry Coating

3.5.1 The condition of the interior dry coating is in two different categories. The coating on the interior of the fluted pedestal is in good condition with approximately one (1) percent visible failures. Typical damage due to maintenance activities is about the extent of the failures. While on the other hand, the coating in the drywell tube, on the bowl, and on the platforms is showing signs of significant failure.

3.5.2 The interior dry coating in the drywell tube, on the bowl, and on the platforms is in poor condition with fifteen (15) to twenty (20) percent visible failures. Moderate surface corrosion is occurring as a result of widespread coating cracking and delamination. Pinhole corrosion can also be found on many of these surfaces.

3.5.3 The coating in the drywell tube, on the bowl, and on the platforms should be replaced within the next year. The fluted pedestal should be spot repaired in localized areas but does not need replacement until the following reconditioning in twenty years. See photos 21 through 48.

3.5.4 After structural repairs are completed, the surfaces described should be abrasive blasted to an SSPC-SP-6 Commercial Blast Clean and replaced with a zinc/epoxy coating system similar to the Tnemec Series 91-H20 Hydro-Zinc/Tnemec Series N140 Pota-Pox Plus or Sherwin Williams epoxy equivalent.

3.6|Exterior Structural

3.6.1 Replace the drywell tube manway lid with an aluminum style lid. The existing lid is oversized and can be a hinderance to open. Install a stop chain connecting the manway cover at the top of the drywell tube to the manway curb and locking mechanism on the dry side. This will limit the angle of travel of the cover, (prevent the cover from opening 180 degrees), support it while open, and assist climbers in opening and closing the cover. See KLM Drawing No. 11 and photos 52 through 54.

3.6.2 To prevent trespassing, install a padlock on the roof access manway. Replace the handle on the roof access manway cover to accept a lock. See photos 21 and 22. The cost of a new lock is not included in the Engineering Cost Estimate.

3.6.3 Install an anchor point on the exterior (roof side) of the drywell tube for securing safety harnesses with lanyards during egress and transitioning from the drywell tube safety climb device to the tower roof. Refer to KLM Drawing No. 25 and photo 52.

3.6.4 Replace the tank vent/finial with a 24-inch diameter aluminum pressure pallet style vent, similar to the one shown on KLM Drawing No. 8a. See photos 52 and 53. The new vent and vent screen design should meet AWWA D100-11 and local Health Department Regulations. The removable top will improve ventilation, provide access to the tank interior during reconditioning, and aid in compliance with OSHA Confined Space Entry Requirements.

3.6.5 Install two (2) 24-inch diameter, hinge covered, roof ventilation manways, approximately 120 degrees from the existing roof manway, set outside the new handrail. See photos 52 and 55. This will provide additional ventilation during the interior surface preparation and coating and aid in compliance with OSHA Confined Space Entry requirements. See KLM Drawing No. 10a.

3.6.6 Install an 18-foot (diameter) roof handrail conforming to OSHA regulations to enclose the existing roof manway(s) and the vent/finial. See KLM Drawing No. 15b and photos 52 through 56. Install a non-skid walkway within the area of the new hand railing.

- 3.6.7** Relocate the antennas to the new handrail and remove all existing antenna mounts. Grind off bracket welds and seal weld any holes remaining per Appendix C. See photos 52 through 55.
- 3.6.8** Remove the non-functional bird deterrent devices from the roof. See photo 55.
- 3.6.9** Replace the double aviation light with a new double LED style aviation light similar to Hughey & Phillips L-810 and relocate to a mount on the newly installed handrail. Remove the existing mount and repair surface as required. Modify/replace electrical conduits and wiring as necessary. See photos 52 through 54.
- 3.6.10** Install four (4) 4-inch diameter couplings at the top of the drywell tube. Relocate existing coaxes upon completion of painting. Install cover plates and seal weld over all unused and abandoned coaxial cable penetrations. See KLM Drawing No. 5a and photos 52 and 53. Remove all unused cables, brackets, etc.
- 3.6.11** Replace the steel double doors in the base of the pedestal. The doors have corroded through in the corners and need to be replaced. See photos 47 and 61.
- 3.6.12** Install an overflow pipe screen retainer and screen meeting Health Department regulations. Use a corrosion resistant, heavy-gauge, No. 4 mesh screen. See KLM Drawing No. 54 and photos 62 and 63.

3.7|Exterior Coating

- 3.7.1** The tower pedestal is a unique material not commonly found in water tower construction. It is constructed of weathering steel, or commonly referred to as COR-TEN steel, that is intended to remain uncoated and create a self-developing protective layer of mild corrosion. The mild corrosion layer is what gives the pedestal its current rust coloration. The pedestal steel appears to be in good condition with no repairs required.
- 3.7.2** The exterior coating on the tank is in poor condition with over twenty percent (20) percent visible failures. Failures consist of top and base coat deterioration, exposed steel substrate in numerous locations resulting in spot corrosion, and widespread fade and chalking due to UV expose. A large amount of bird droppings is covering the roof as well. The original coating is assumed to be around 35 years old and surpassed its normal service life. Due to the coating age and condition, the exterior is not a candidate for repairs or an overcoat. The coating should be removed and replaced in its entirety at the same time as the interior wet and dry coatings, within the next year. See photos 52 through 59, 61, and 65.
- 3.7.2** After structural repairs are completed, the exterior coated surfaces should be abrasive blasted to an SSPC-SP6 Commercial Blast Clean and replaced with a zinc/epoxy/urethane/fluoropolymer coating system (similar to the Tnemec Series 91-H20 Hydro-Zinc/Series N140 Pota-Pox Plus Epoxy/Series 73 Endurashield/Series 701 Hydroflon coatings).
- 3.7.3** The COR-TEN column should be pressure washed after reconditioning the tank above to remove the organic growth accumulated on its various surfaces. See photos 57 through 64.

3.8|Site and Environmental Considerations

- 3.8.1** The tower is located in Watertower Park at the intersection of Ridge Street and High Street. The brick well house is approximately 30 feet to the south of the tower. Being located in a park, the area surrounding the tower is well kept with some manicured shrubbery around the base and no perimeter fencing. Ridge Street is only 30 to 40 feet to the west and some larger trees are located approximately 20 feet to the east. Most of the playground equipment is located to the east of the tower.
- 3.8.2** Soil grading around the tower seems to shed water away from the base of the tower adequately. See photos 61 through 64.

3.8.3 A hydrant is located near the tower that can be used for tower maintenance and appears to have valving that would allow it to be taken out of service. See photo 64.

3.9|Telecommunications Considerations

3.9.1 The tower has some telecommunications equipment, including antennas, coaxial cables, support brackets and other miscellaneous equipment. The Owner is advised to maintain accurate records of each of the antenna sites on the tower, including As-Built Drawings, site manager and owner contact information, upgrades performed, and future plans for antenna installations or upgrades. These records will help facilitate the future reconditioning with a minimal amount of effort on the Owner's part.

3.9.2 Working around and protecting the telecommunications equipment, including antennas, coaxial cables, support brackets, and other miscellaneous equipment during future reconditioning will incur additional costs. The antenna owner(s) should be responsible for these expenses under clause(s) in the antenna lease agreements. These costs are not included in the Engineer's Cost Estimate, as they vary considerably from tower to tower.


3.9.3 Prior to reconditioning, in accordance with the lease requirements of each antenna owner, the City of Mineral Point should notify the telecommunications owners or manager of the work to be performed. The City should also determine whether: a) the antenna owners will pay the additional costs to work around and protect the antennas; b) the antenna owners will temporarily remove their antennas and associated equipment to facilitate reconditioning; or c) the City of Mineral Point will have to pay for these costs themselves.

4.0|REPAIR AND RECONDITIONING OVERVIEW

KLM recommends repairs be completed within 12 months. An experienced tank-coating contractor with the proper crew and equipment should be able to complete the project in ten (10) weeks.

KLM ENGINEERING, INC.

Report prepared by:


Ben Feldman, P.E.
Project Engineer
MN License No. 49598

Report reviewed and certified by:


Rodney Ellis
Vice President/COO
NACE Certified Coatings Inspector No. 1686
AWS/CWI 04040311

August 6, 2019

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P:\2019\2019 Evaluations And Photos\Mineral Point, WI MN3961 0.4MG Hydropillar\Mineral Point, WI MN3961 Full Report Final Rje Comments.Docx



APPENDIX A

PHOTOGRAPHS



Photo No. 1
Overall view of tower



Photo No. 2
Overall condition of interior wet coating above HWL



Photo No. 3
Condition of interior wet coating on roof around compression ring



Photo No. 4
Condition of bolted rafter connections on compression ring



Photo No. 5
Condition of interior wet coating around drywell tube and manway access



Photo No. 6
Condition of top of overflow pipe; view from below HWL



Photo No. 7
Condition of interior wet coating on drywell tube below HWL



Photo No. 8
Condition of interior wet coating on drywell tube at stiffener ring
Rust coloration due to corrosion



Photo No. 9
Condition of interior wet coating on drywell tube at a stiffener ring



Photo No. 10
Condition of interior wet coating just below HWL
Dark scale formation on shell



Photo No. 11
Condition of interior wet coating on shell wall
Heavy scale and staining visible; coating blistering and pinhole corrosion along welds



Photo No. 12
Condition of interior wet coating on shell wall
Heavy scale and staining visible; coating blistering and pinhole corrosion along welds



Photo No. 13
Condition of interior wet coating on shell wall
Heavy staining and scale development



Photo No. 14
Submerged cathodic protection system



8/2/2019 9:04:13 AM

H: 241.6 °
D: 37.31 ft
Temp: 62.7 °F

Photo No. 15
Condition of interior wet coating near tension ring
Sediment accumulation and scale formation visible



8/2/2019 9:02:52 AM

H: 052.0 °
D: 37.08 ft
Temp: 62.7 °F

Photo No. 16
Condition of interior wet coating near tension ring
Heavy sediment accumulation visible



Photo No. 17
Heavy sediment accumulation and scale deposits in bowl



Photo No. 18
Heavy sediment accumulation and scale deposits in bowl
Bowl manway visible



Photo No. 19
Condition of interior wet coating at base of drywell tube
Cathodic protection cables visible



Photo No. 20
Condition of fill pipe in bowl
Sediment accumulation visible around pipe



Photo No. 21
Condition of interior dry coating at top of drywell tube
Significant peeling and surface corrosion occurring



Photo No. 22
Condition of interior dry coating at top of drywell tube
Significant peeling and surface corrosion occurring

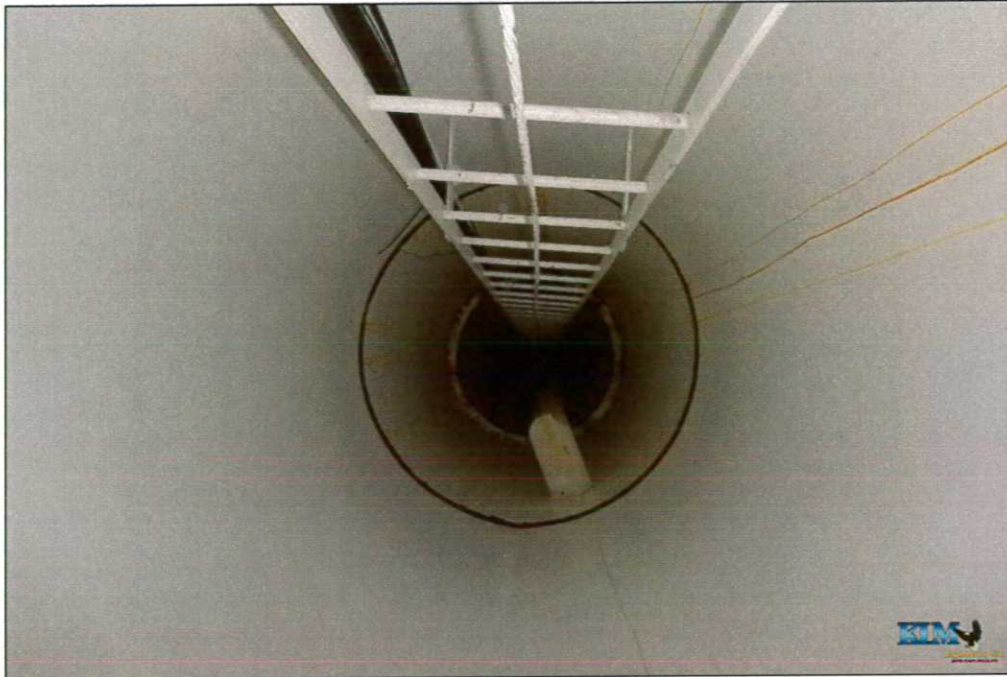


Photo No. 23
Condition of interior dry coating inside drywell tube; view looking down tube



Photo No. 24
Condition of interior wet coating inside drywell tube



Photo No. 25
Condition of interior dry coating inside drywell tube
Significant coating peeling and surface corrosion



Photo No. 26
Condition of interior dry coating inside drywell tube
Significant coating peeling and surface corrosion



Photo No. 27
Condition of interior dry coating inside drywell tube
Significant coating peeling and surface corrosion



Photo No. 28
Condition of interior dry coating inside drywell tube
Significant coating peeling and surface corrosion



Photo No. 29
Condition of interior dry coating inside drywell tube
Significant coating peeling and surface corrosion; staining from corrosion areas

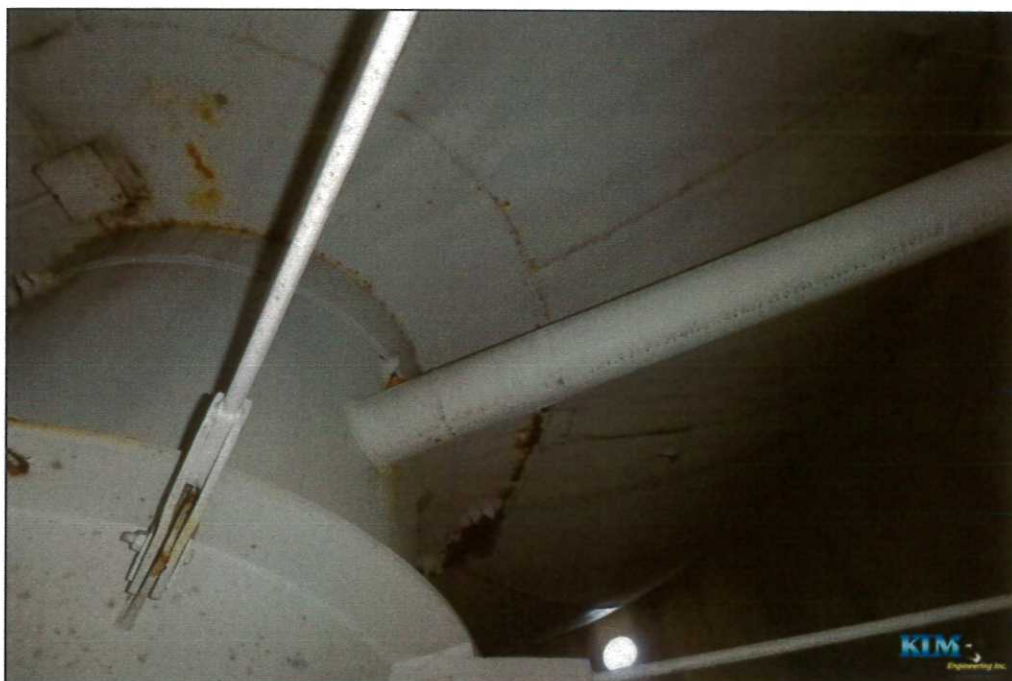


Photo No. 30
Condition of interior dry coating on bowl and drywell tube
Random locations of heavy coating peeling and surface corrosion



Photo No. 31
Condition of interior dry coating on bowl at bowl manway
Random locations of heavy coating peeling and surface corrosion



Photo No. 32
Condition of interior dry coating on bowl, drywell tube, fill pipe connection, and upper wall
Random locations of heavy coating peeling and surface corrosion



Photo No. 33
Condition of interior dry coating on bowl to wall connections



Photo No. 34
Condition of interior dry coating on drywell tube
Cathodic protection system conduit and junction box visible



Photo No. 35
Overall condition of interior dry coating at bowl platform

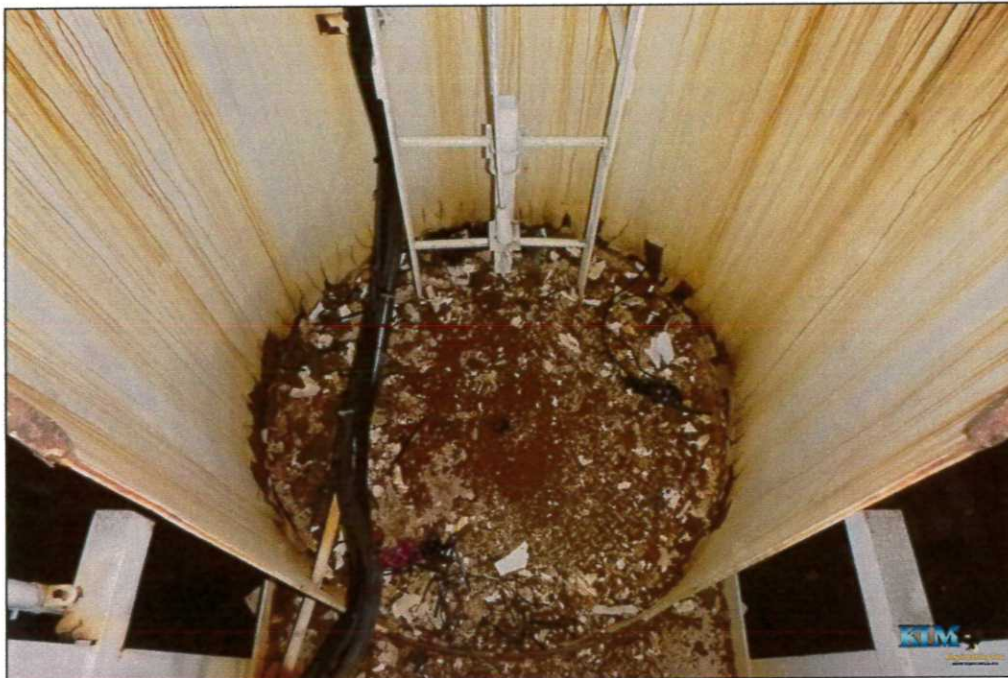


Photo No. 36
Condition of interior dry coating on drywell tube platform



Photo No. 37
Condition of interior dry coating on drywell tube platform



Photo No. 38
Condition of interior dry coating on drywell tube and platform



Photo No. 39
Condition of interior dry coating inside pedestal
View looking down pedestal to condensate ceiling below



Photo No. 40
Condition of access ladders and wall coating inside pedestal



Photo No. 41
Condition of interior dry coating on condensate platform



Photo No. 42
Condition of condensate platform drain-pipe connection



Photo No. 43
Overall view of conditions inside base of pedestal



Photo No. 44
Condition of pedestal interior at base
Some missing foil wrap visible



Photo No. 45
Condition of insulation and wrap on fill pipe at base of pedestal
Hatch to valve pit visible



Photo No. 46
Condition of interior dry coating on bottom of condensate platform



Photo No. 47
Condition of double access doors at base of pedestal
Doors are severely corroded in bottom corners



Photo No. 48
Condition of interior wet coating at base pedestal at double access doors
Severe corrosion occurring on doors and on door frame



Photo No. 49
Condition of piping, valves, and fittings inside valve pit



Photo No. 50
Sample tap located in valve pit



Photo No. 51
Condition of sump pump in valve pit



Photo No. 52
Overall view exterior roof condition



Photo No. 53
Condition of existing tank vent

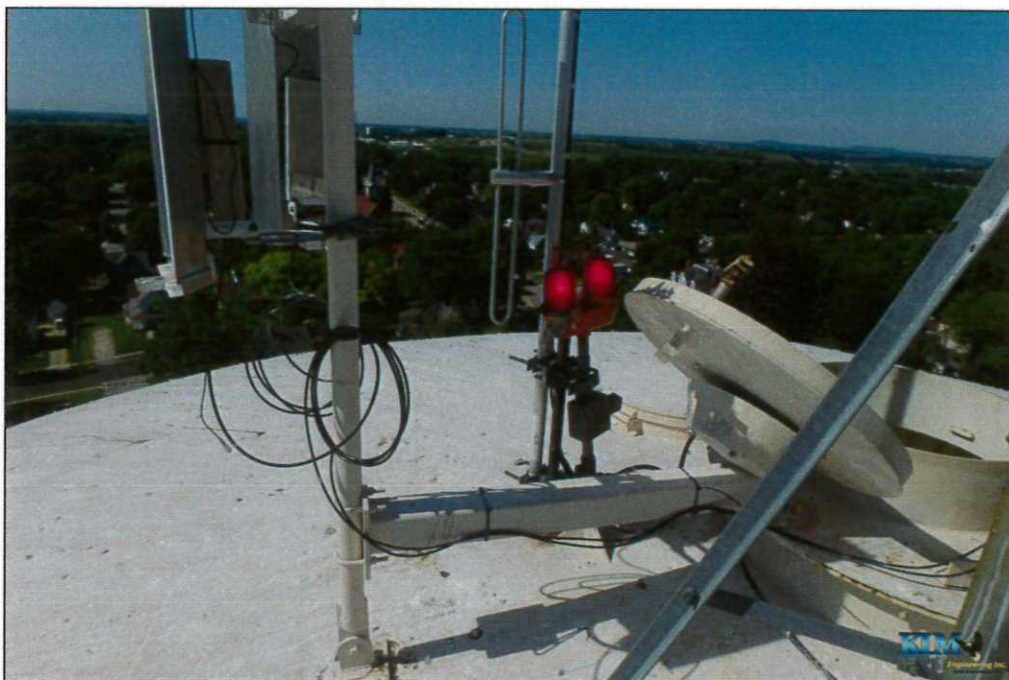


Photo No. 54
Condition of antenna mounts, drywell tube access hatch, and double aviation beacon



Photo No. 55
Condition of exterior coating on roof
Bird droppings covering roof; non-functional bird deterrent visible



Photo No. 56
Condition of exterior coating on roof
Bird droppings covering roof



Photo No. 57
Overall condition of exterior coating on side of tank
Heavy organic growth on lower half of tank



Photo No. 58
Condition of exterior coating near base of tank
Spot and surface corrosion visible

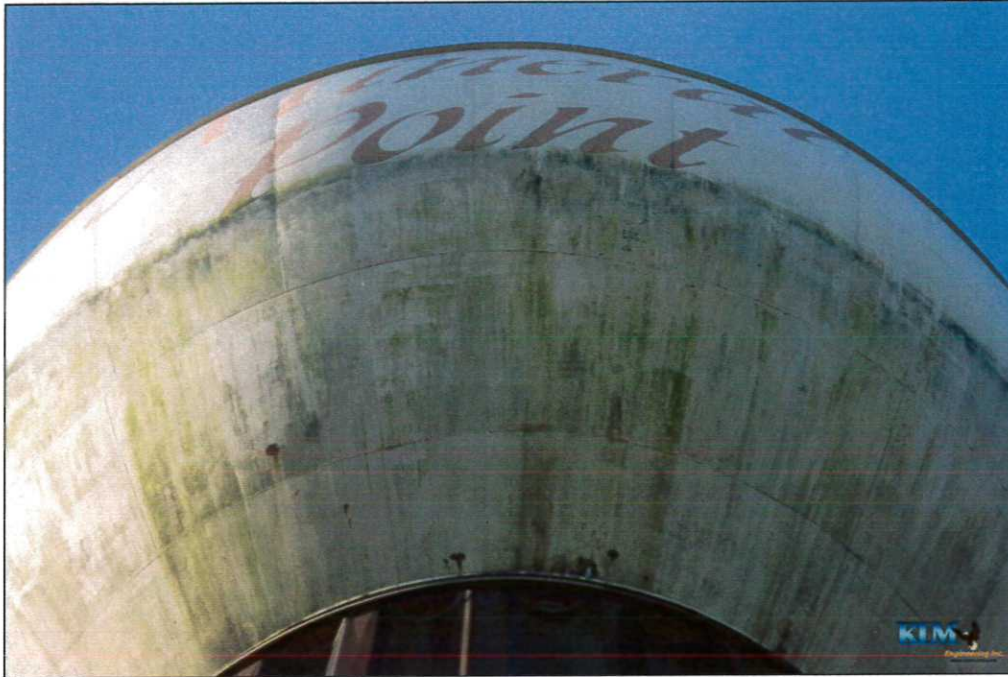


Photo No. 59
Condition of exterior coating near base of tank
Spot and surface corrosion visible

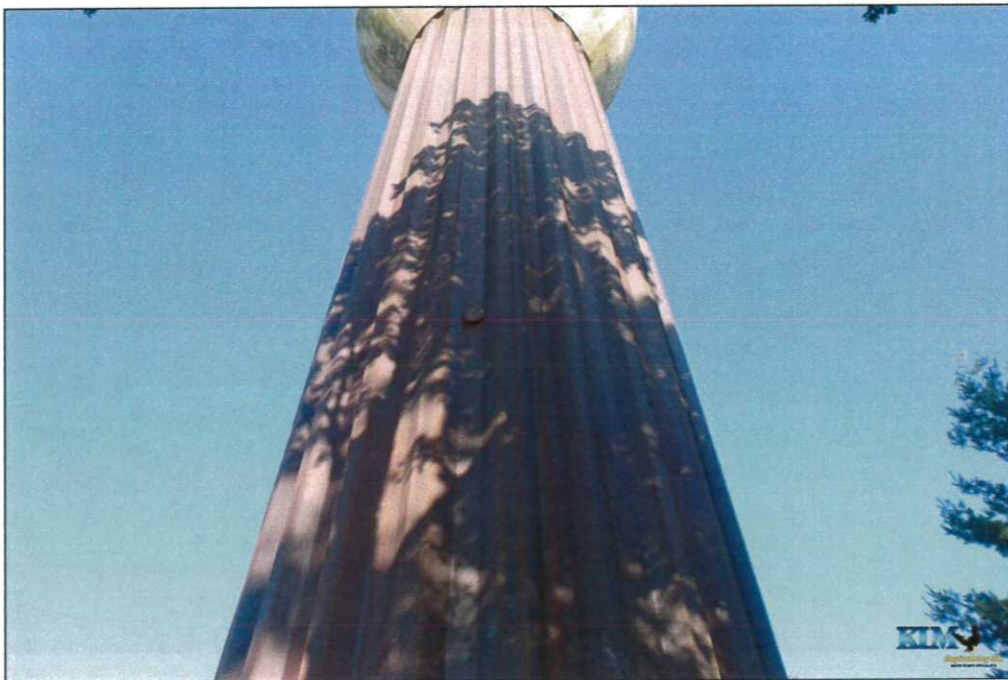


Photo No. 60
Condition of uncoated COR-TEN steel pedestal



Photo No. 61
Condition of uncoated COR-TEN steel pedestal at base
Double access doors significantly corroded at bottom corners



Photo No. 62
Condition of overflow pipe and splash pad at base of tower

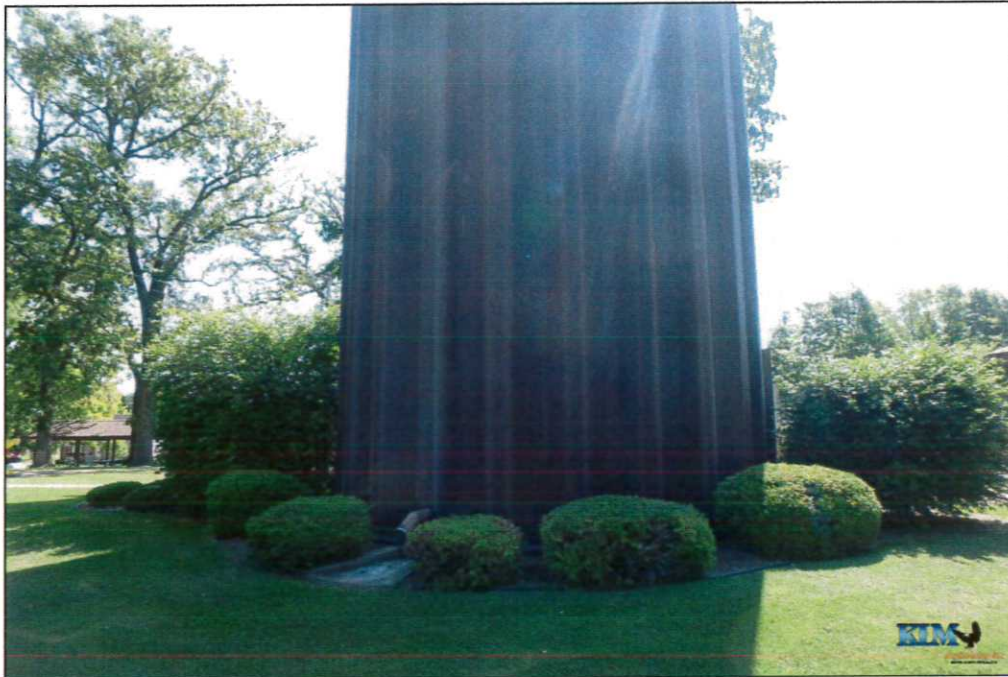


Photo No. 63
Site conditions around base of tower



Photo No. 64
Site conditions near base of tower
Hydrant for maintenance needs visible

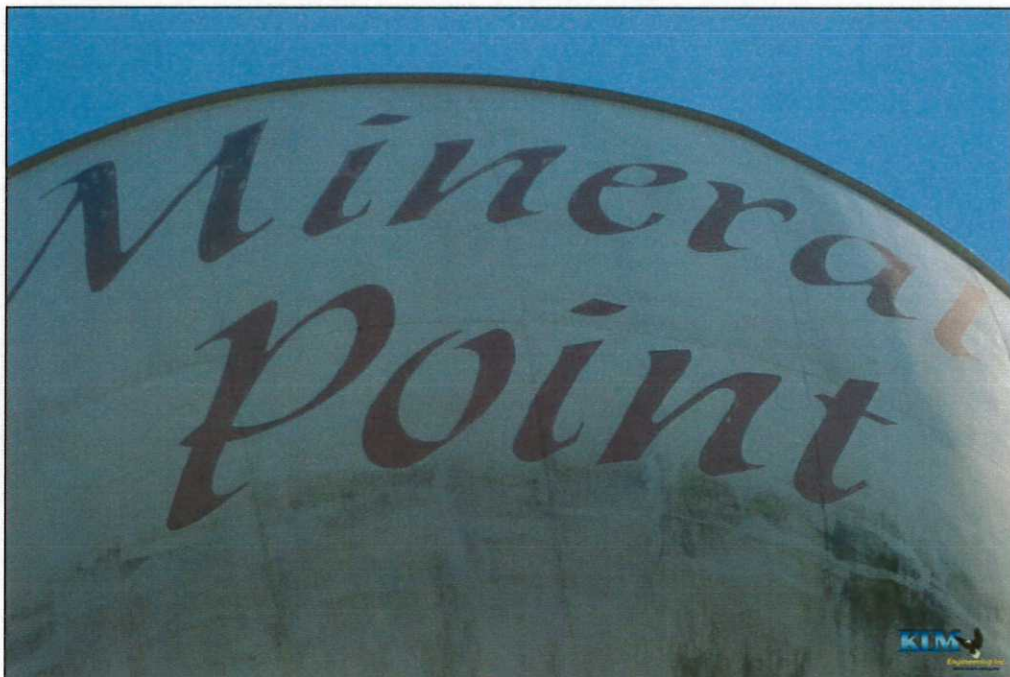


Photo No. 65
Condition of City logo

APPENDIX B

DRAWINGS



KLM ENGINEERING, INC.

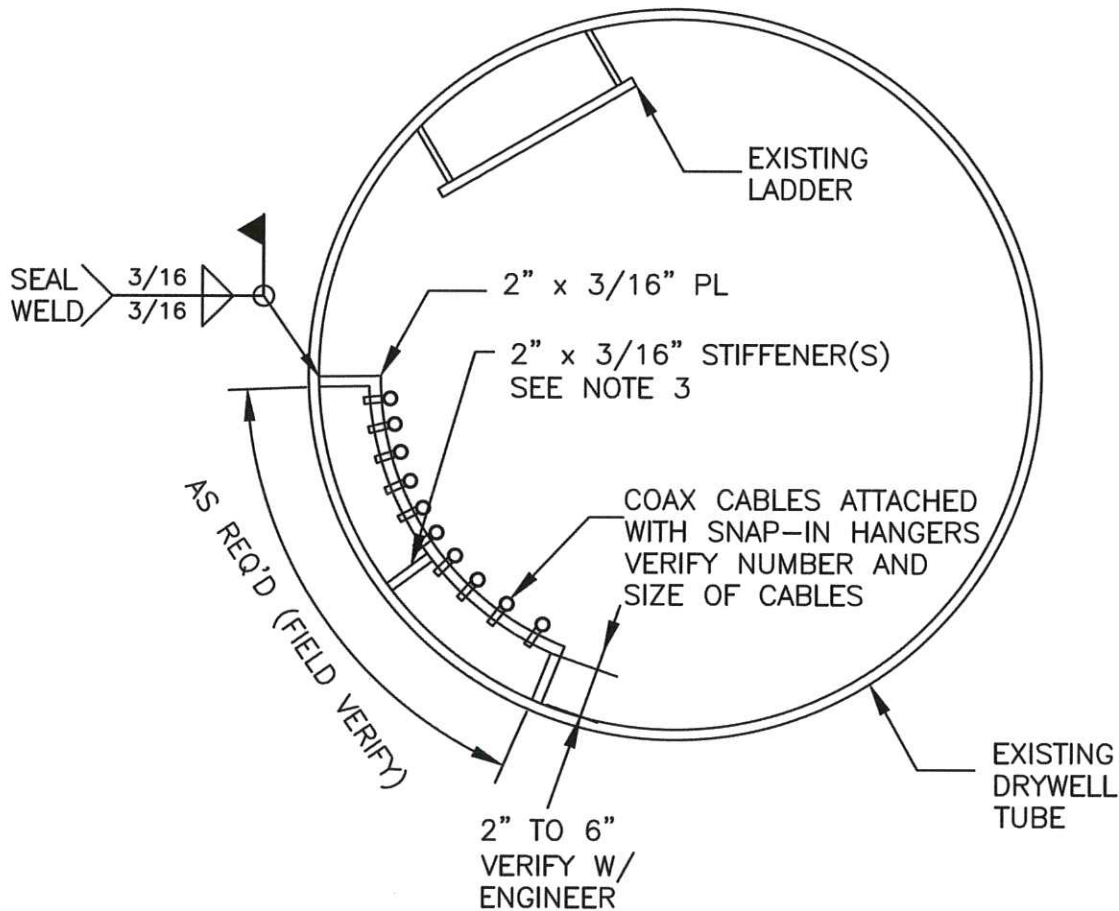
1976 Wooddale Drive
Suite 4
Woodbury, MN 55125
(651) 773-5111
Fax (651) 773-5222



KLM PROJECT NO.		KLM DRAWING NO. 4a
SUBJECT		DRYWELL TUBE CABLE BRACKET
DRAWN BY	MCE	DATE
CHECKED BY	JJT	DATE JULY 2017

NOTES:

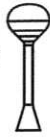
1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. PROVIDE A STIFFENER AT CENTER FOR 3' TO 4' LONG BRACKETS AND PROVIDE STIFFENERS ON 2' CENTERS MAXIMUM ON LONGER BRACKETS.





KLM ENGINEERING, INC.

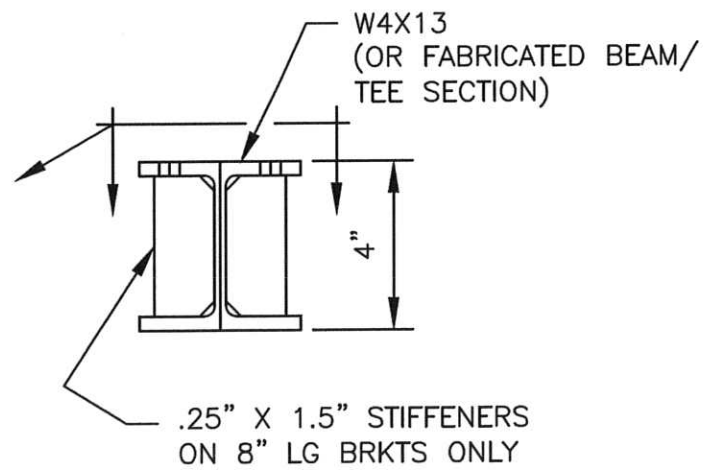
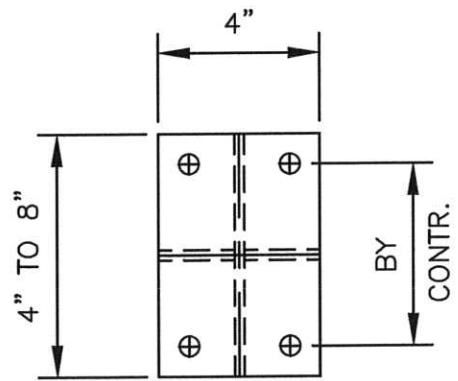
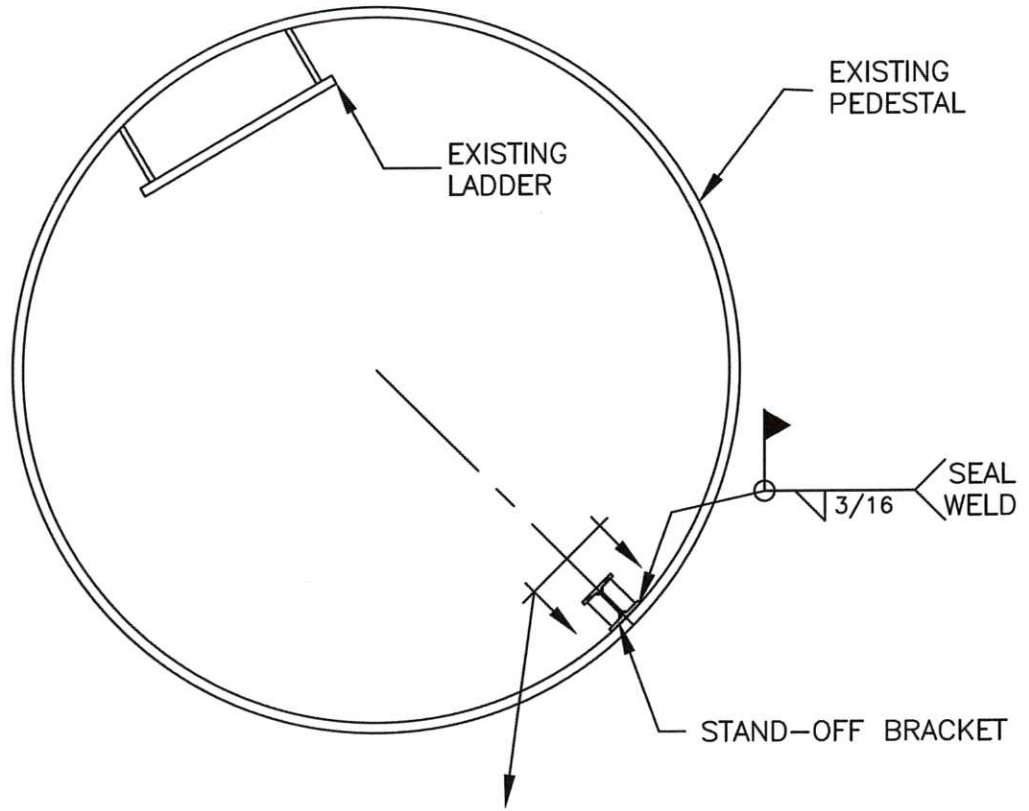
1976 Wooddale Drive
Suite 4
Woodbury, MN 55125
(651) 773-5111
Fax (651) 773-5222



KLM PROJECT NO.	KLM DRAWING NO. 4b	
SUBJECT	PEDESTAL STAND-OFF BRACKET	
DRAWN BY	JJT	DATE JULY 2017
CHECKED BY		DATE

NOTES:

1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. LOCATION OF STAND-OFF BRACKETS BY CONTRACTOR WITH APPROVAL OF ENGINEER.
4. HOLE SIZE AND LOCATION BY CONTRACTOR.
5. BRACKETS 4" LONG ARE FOR ONE (1) SET OF HOLES.
6. BRACKET SPACING 8' MAXIMUM.





KLM ENGINEERING, INC.

1978 Wooddale Drive
Suite 4
Woodbury, MN 55125
(651) 773-5111
Fax (651) 773-5222



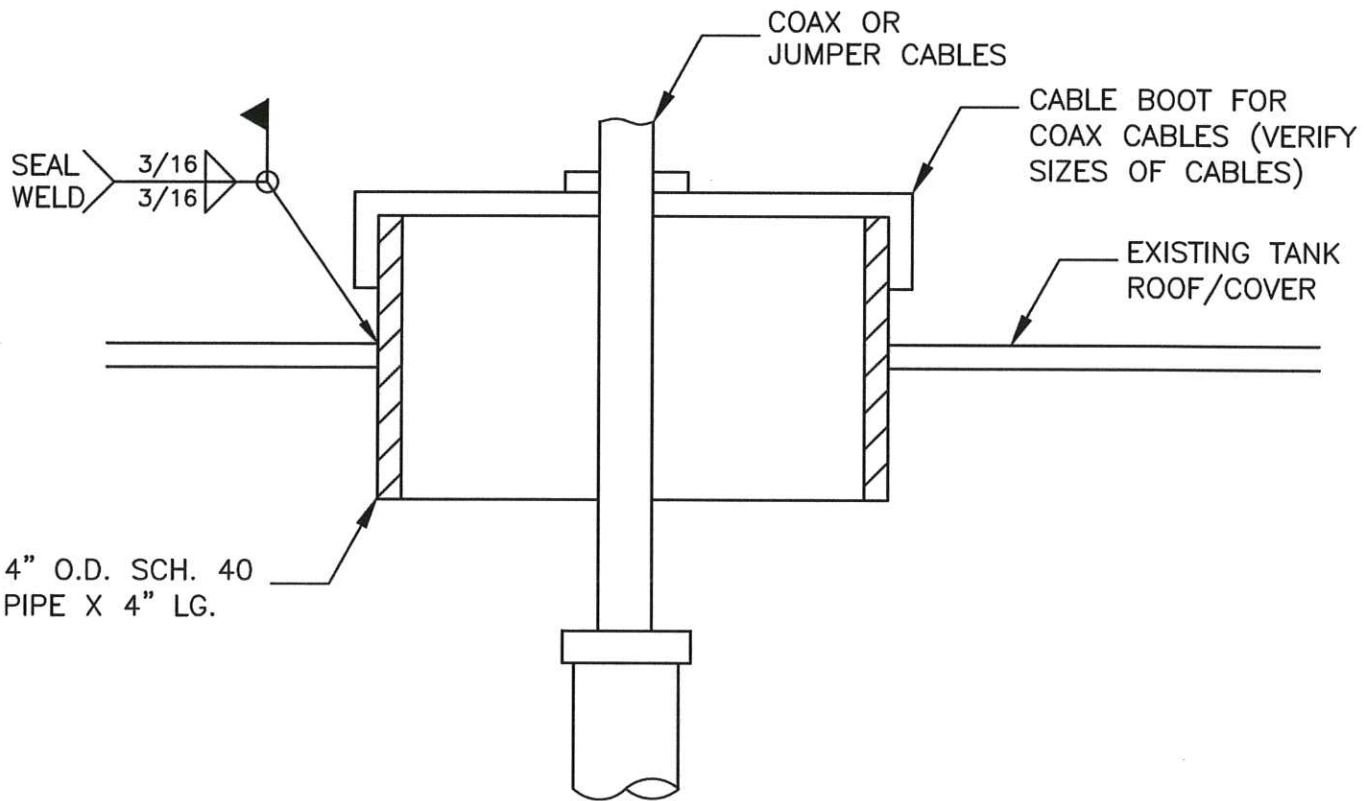
KLM PROJECT NO.

KLM DRAWING NO. 5a

SUBJECT	ROOF CABLE	PENETRATION
DRAWN BY	MCE	DATE
CHECKED BY	JJT	DATE JANUARY 2018

NOTES:

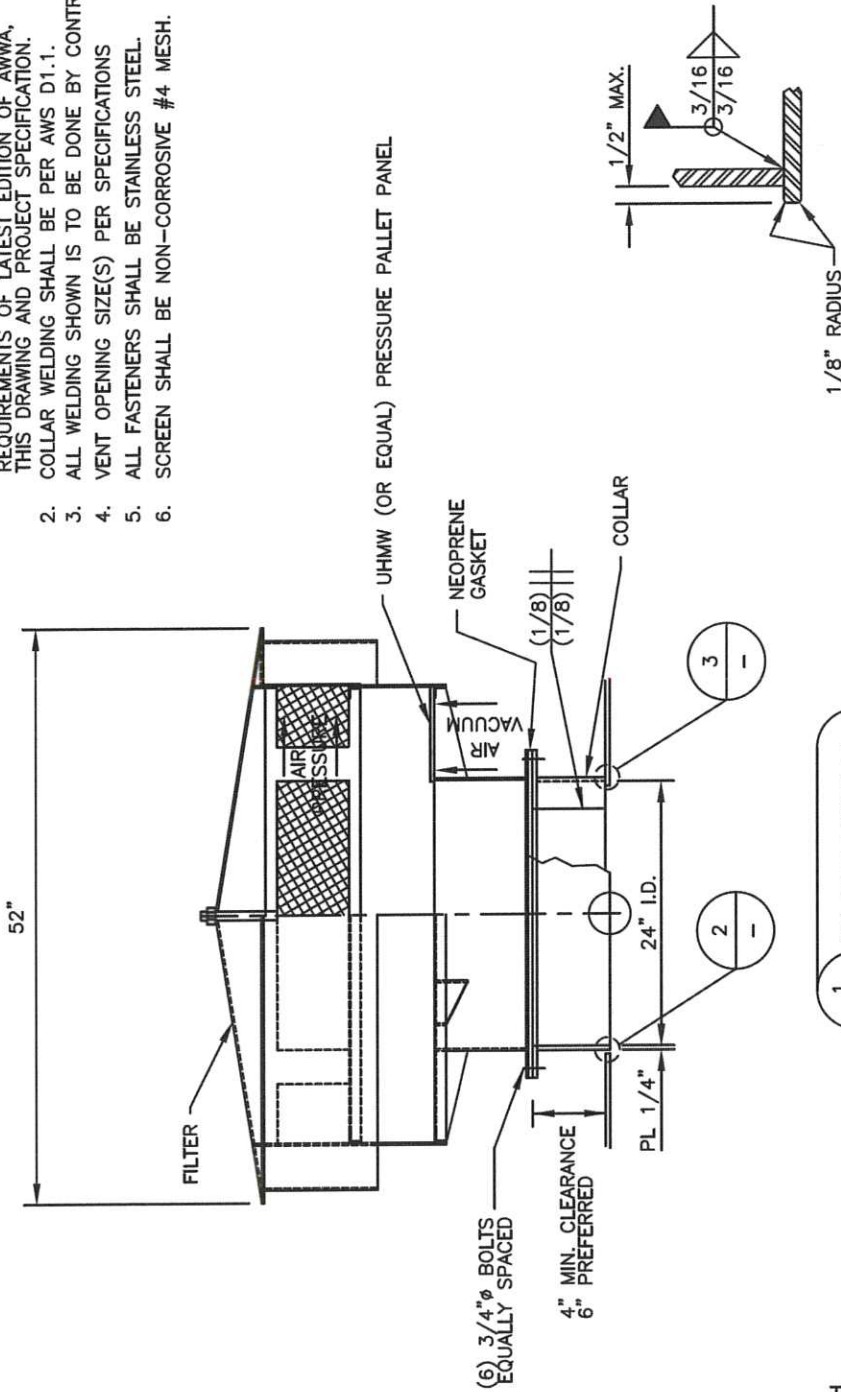
1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



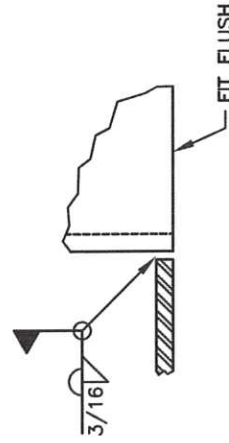
VENT SIZE	COVER DIA
24	52
20	43
18	39
16	35
12	26

NOTES:

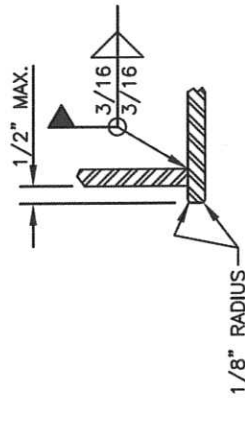
1. FILTER MATERIAL SHALL BE ALUMINUM AND FABRICATED PER FABRICATORS OPTION BUT MUST MEET REQUIREMENTS OF LATEST EDITION OF AWWA, THIS DRAWING AND PROJECT SPECIFICATION.
2. COLLAR WELDING SHALL BE PER AWS D1.1.
3. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
4. VENT OPENING SIZE(S) PER SPECIFICATIONS
5. ALL FASTENERS SHALL BE STAINLESS STEEL.
6. SCREEN SHALL BE NON-CORROSIVE #4 MESH.



1 ELEVATION



2 DETAIL-OPTION 1

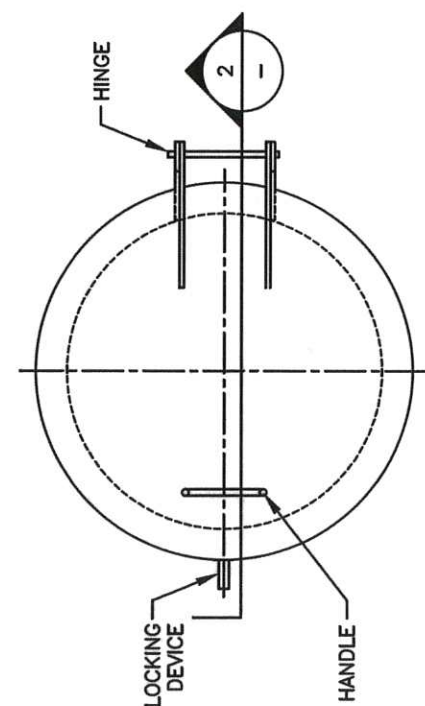


3 DETAIL-OPTION 2

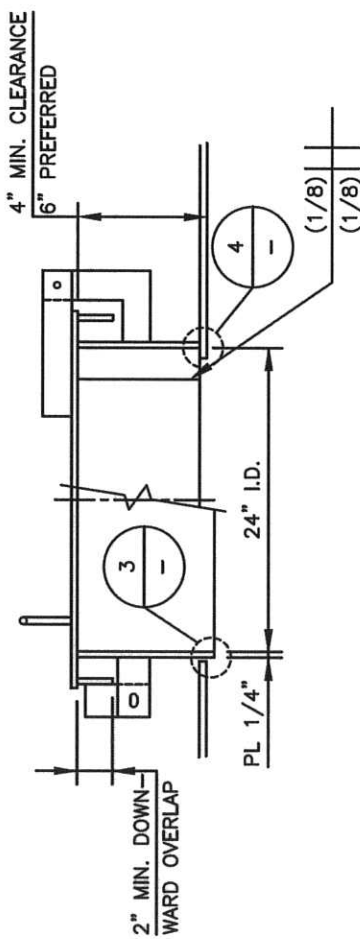
KLM ENGINEERING, INC.
 1976 Wooddale Drive
 Suite 4
 Woodbury, MN 55125
 (651) 773-9111
 Fax: (651) 773-9222

ALUMINUM
 PRESSURE PALLET FINIAL VENT

DATE	JULY 2018
KLM DRAWING NO.	8a



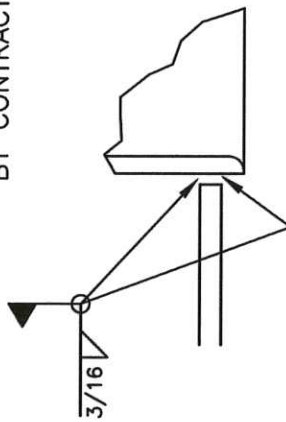
1 PLAN VIEW



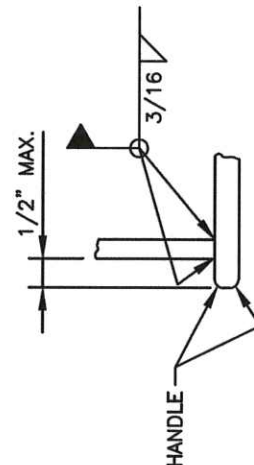
2 SECTIONAL ELEVATION

NOTES:

1. METHOD AND MATERIALS OF CONSTRUCTION ARE AT FABRICATOR'S OPTION, BUT MUST MEET REQUIREMENTS OF LATEST EDITION OF AWWA.
2. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
3. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



3 DETAIL-OPTION 1



4 DETAIL-OPTION 2

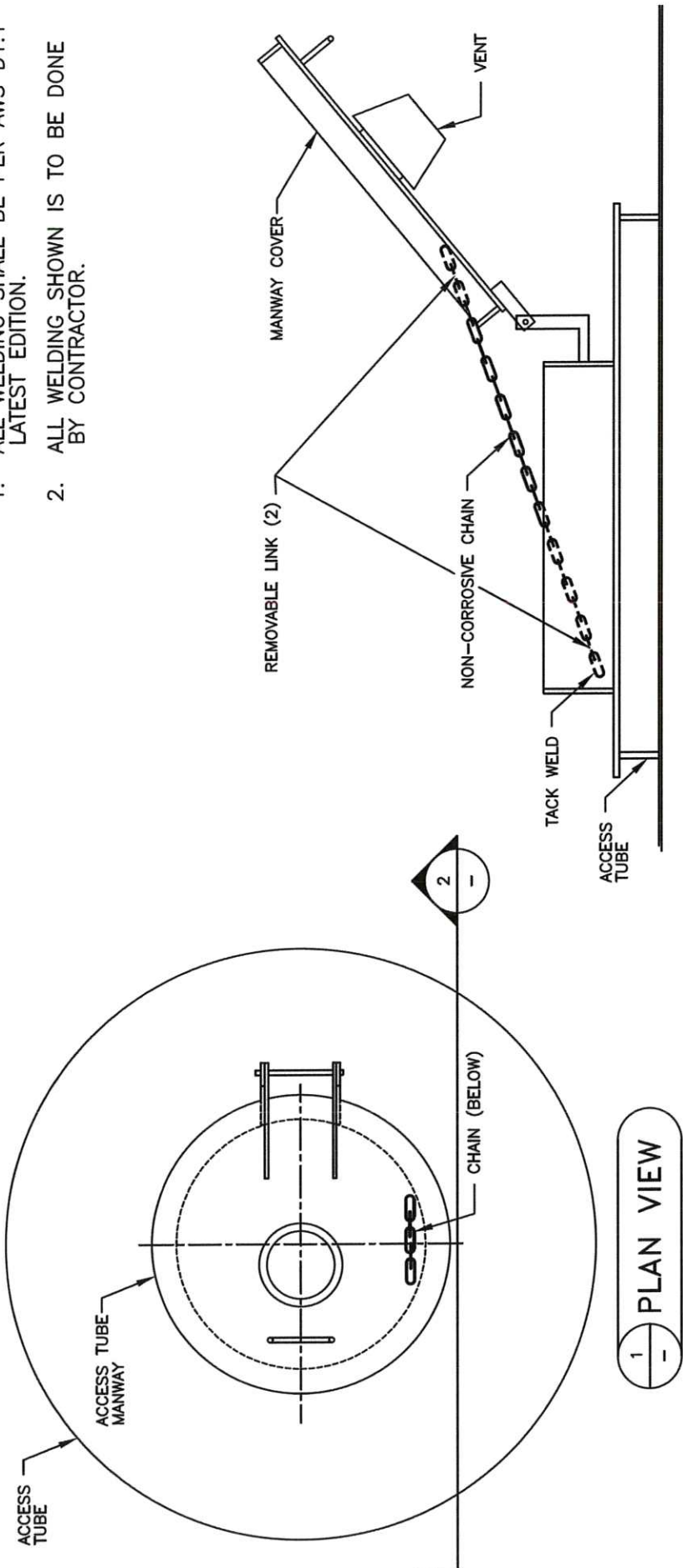
KLM ENGINEERING, INC.
 1976 Wooddale Drive
 Suite 200
 Woodbury, MN 55125
 (551) 773-5111
 Fax (551) 773-5222

24" Ø VENTILATION ROOF MANWAY

DATE	JANUARY 2018
KLM DRAWING NO.	10a

NOTES:

1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



1 PLAN VIEW

2 SECTIONAL ELEVATION

KLM ENGINEERING, INC.
1976 Woodside Drive
Woodbury, MN 55125
(851) 773-8111
Fax (851) 773-8222

MANWAY COVER CHAIN STOP

DATE	JANUARY 2018
KLM DRAWING NO.	11



KLM ENGINEERING, INC.

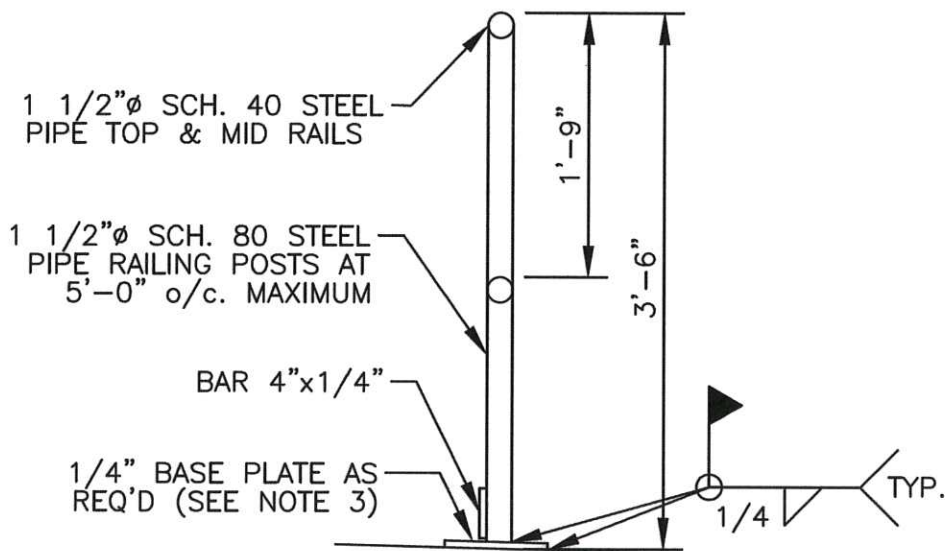
1976 Wooddale Drive
Suite 4
Woodbury, MN 55125
(651) 773-5111
Fax (651) 773-5222



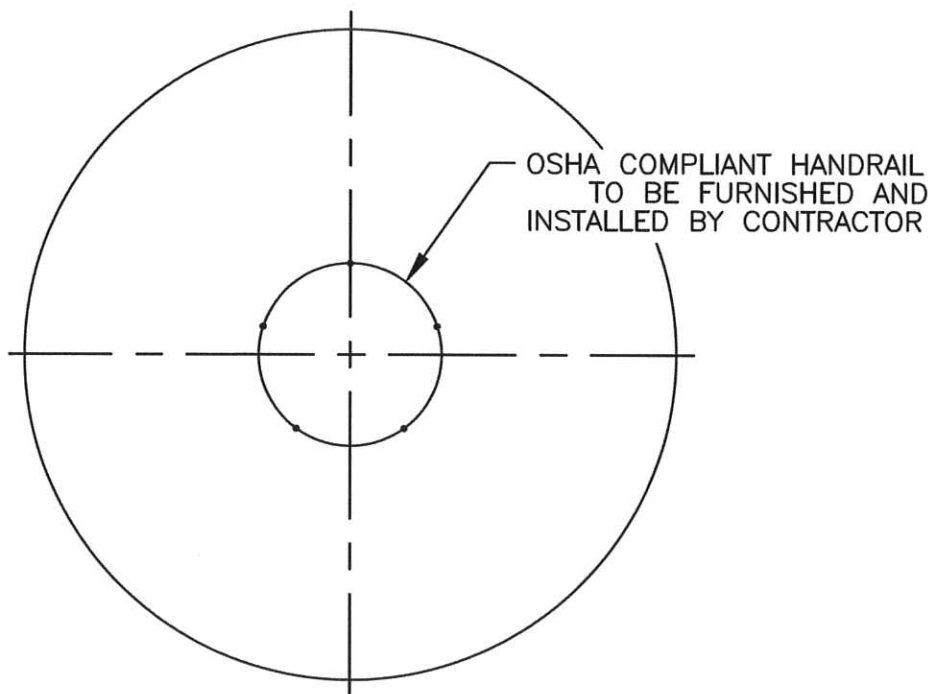
KLM PROJECT NO.	KLM DRAWING NO. 15b
SUBJECT	PIPE STYLE ROOF HANDRAIL CENTER DRYWELL
DRAWN BY	DATE JANUARY 2018
CHECKED BY	DATE

NOTES:

1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. THE 1/4" BASE PLATES FOR THE HANDRAIL POSTS ARE ONLY REQUIRED WHEN SPECIFIED OR UNDER THE DIRECTION OF THE ENGINEER.



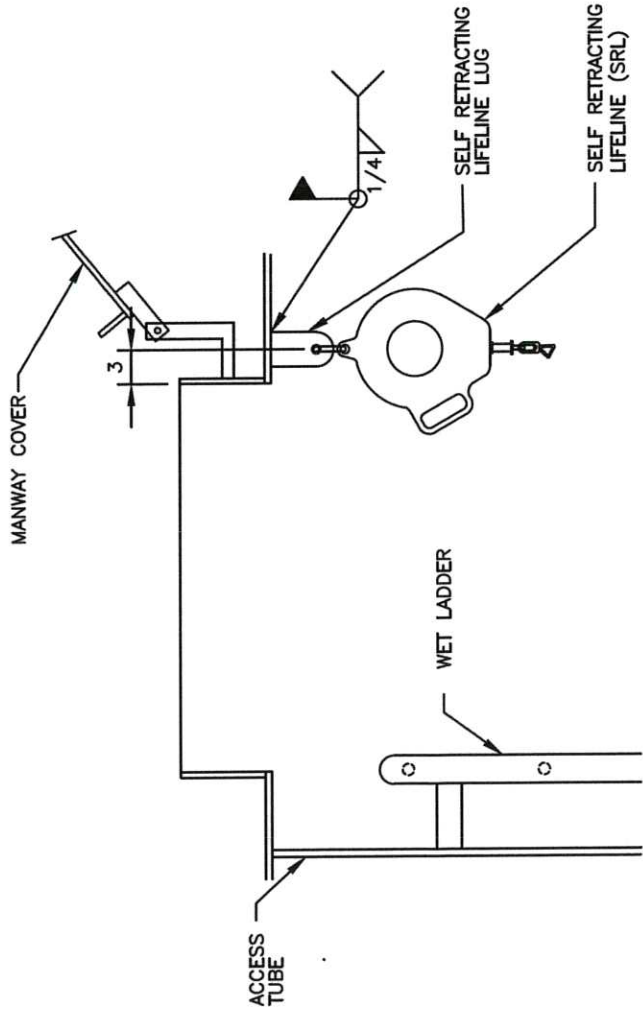
SECTION THRU HANDRAIL



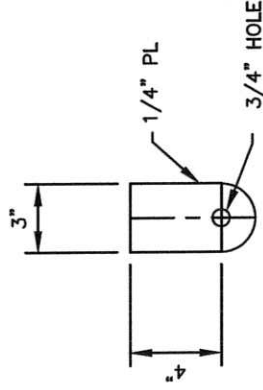
ROOF PLAN VIEW

NOTES:

1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. INSTALL PRIOR TO RECOATING.
4. FIELD VERIFY LOCATION.
5. SELF RETRACTING LIFELINE (SRL) SHALL BE SALA SEALED BLOCK HEAVY DUTY OR EQUAL.



1 SECTIONAL ELEVATION



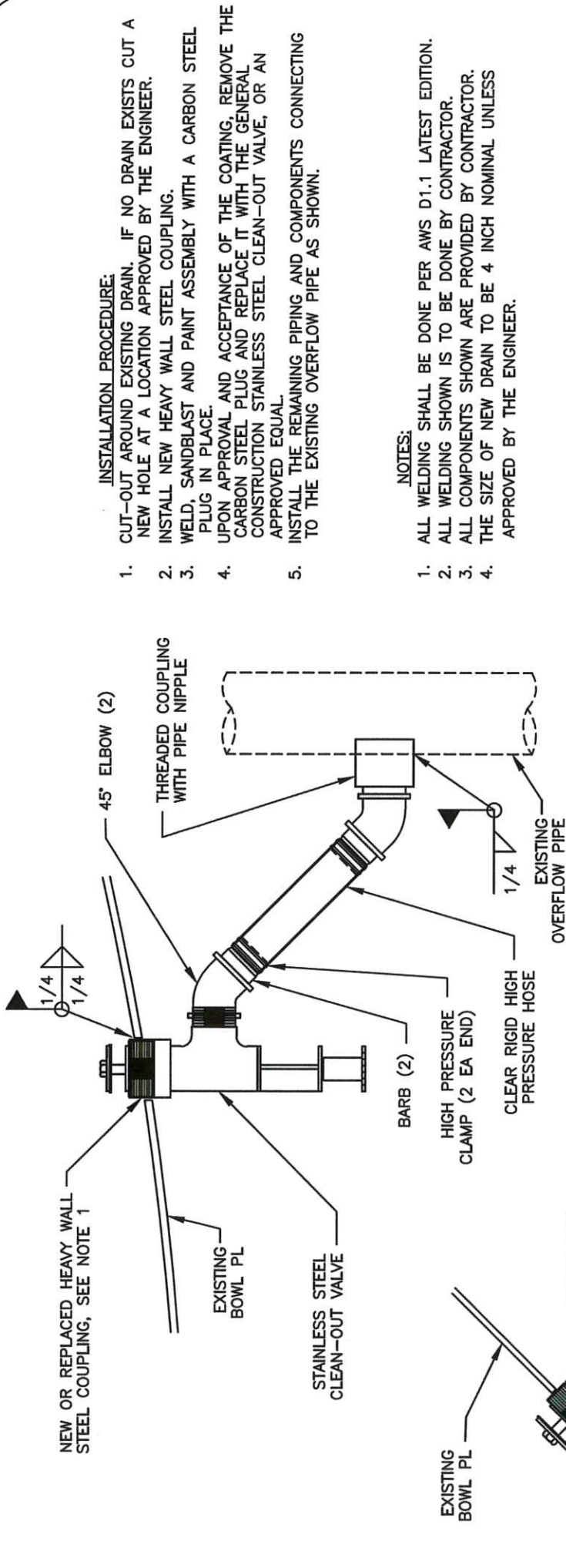
2 LUG DETAIL

KLM ENGINEERING, INC.
 1976 Wooddale Drive
 Woodbury, MN 55125
 (651) 773-8111
 Fax (651) 773-5222

SELF RETRACTING LIFELINE AND LUG

DATE	MARCH 2019
KLM DRAWING NO.	26

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CLEAN-OUT VALVE MOUNTING

ALTERNATE MOUNTING

KLM ENGINEERING, INC.
 1976 Wooddale Drive
 Suite 4
 Woodbury, MN 55125
 (651) 773-5111
 Fax: (651) 773-9222

**STAINLESS STEEL
 BOWL DRAIN VALVE**

INSTALLATION PROCEDURE:

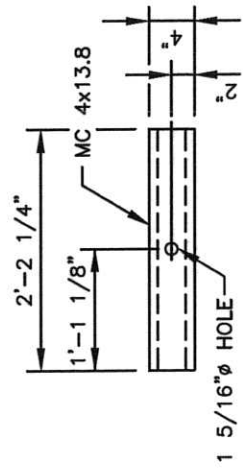
1. CUT-OUT AROUND EXISTING DRAIN. IF NO DRAIN EXISTS CUT A NEW HOLE AT A LOCATION APPROVED BY THE ENGINEER.
2. INSTALL NEW HEAVY WALL STEEL COUPLING.
3. WELD, SANDBLAST AND PAINT ASSEMBLY WITH A CARBON STEEL PLUG IN PLACE.
4. UPON APPROVAL AND ACCEPTANCE OF THE COATING, REMOVE THE CARBON STEEL PLUG AND REPLACE IT WITH THE GENERAL CONSTRUCTION STAINLESS STEEL CLEAN-OUT VALVE, OR AN APPROVED EQUAL.
5. INSTALL THE REMAINING PIPING AND COMPONENTS CONNECTING TO THE EXISTING OVERFLOW PIPE AS SHOWN.

NOTES:

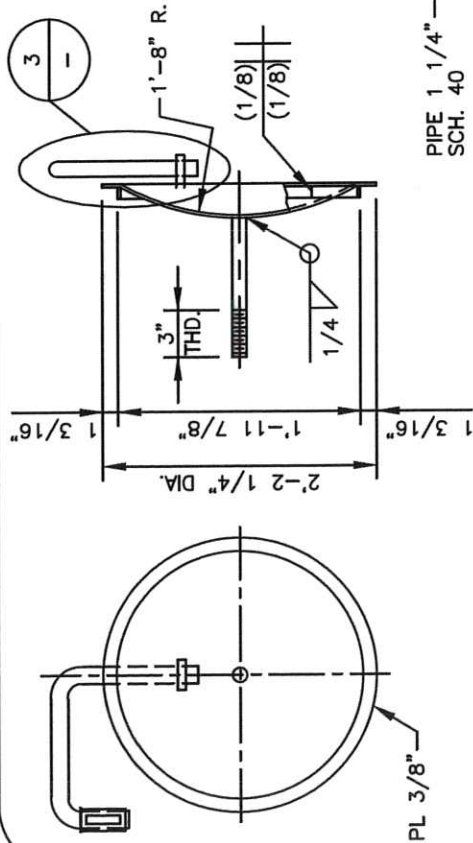
1. ALL WELDING SHALL BE DONE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. ALL COMPONENTS SHOWN ARE PROVIDED BY CONTRACTOR.
4. THE SIZE OF NEW DRAIN TO BE 4 INCH NOMINAL UNLESS APPROVED BY THE ENGINEER.

DATE	OCTOBER 2018
KLM DRAWING NO.	33

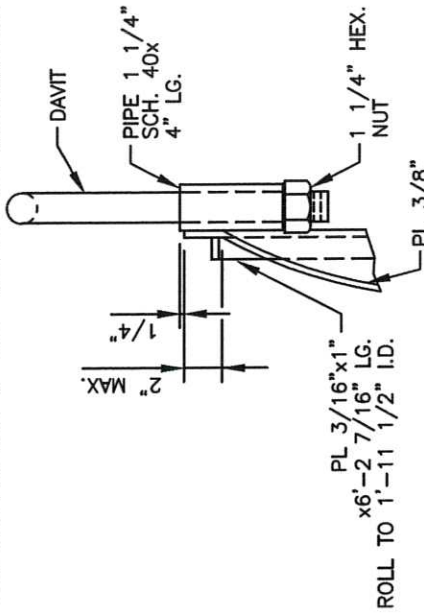
- NOTES:
1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
 2. CONTRACTOR TO PROVIDE CERTIFIED CALCULATIONS IF NO REPAD IS INSTALLED.



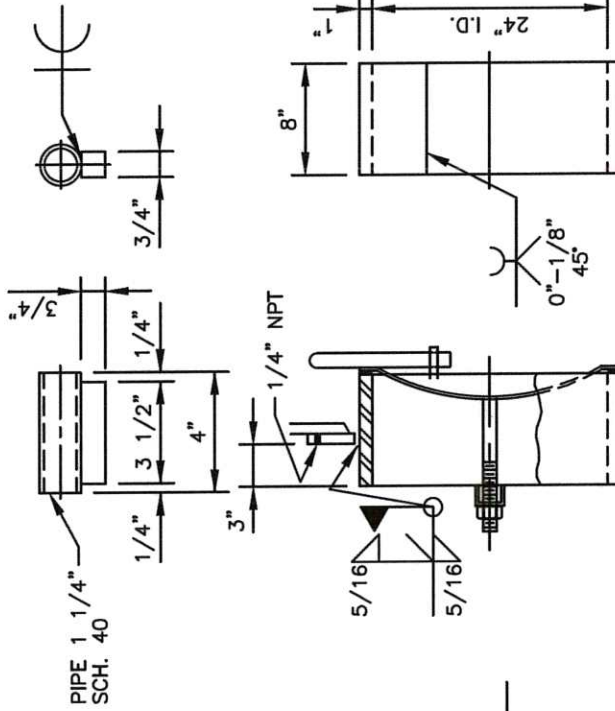
2 COVER DETAIL



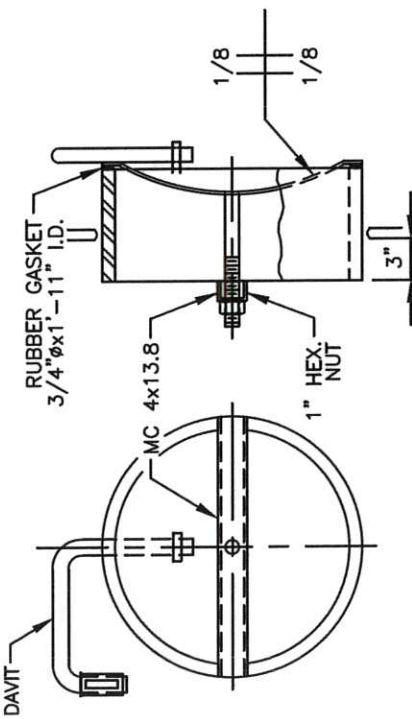
1 COVER DETAIL



3 DAVIT CONN. DETAIL



5 ELEVATION w/ REPAD



4 ELEVATION w/o REPAD

NECK: PL 1"x8"x6'-6 9/16" O.D.

REPAD PL AS REQUIRED BY ENGINEER

KLM ENGINEERING, INC.
 1976 Wooddale Drive
 Woodbury, MN 55042
 (651) 773-5111
 Fax (651) 773-5222

24" SHELL MANWAY
 PRESSURE TYPE

DATE	JANUARY 2018
KLM DRAWING NO.	37a



KLM ENGINEERING, INC.

1976 Wooddale Drive
Suite 4
Woodbury, MN 55042
(651) 773-5111
Fax (651) 773-5222



KLM PROJECT NO.

KLM DRAWING NO. 37c

SUBJECT DRYWELL TUBE MANWAY STEP-OFF PLATFORM

DRAWN BY JJT

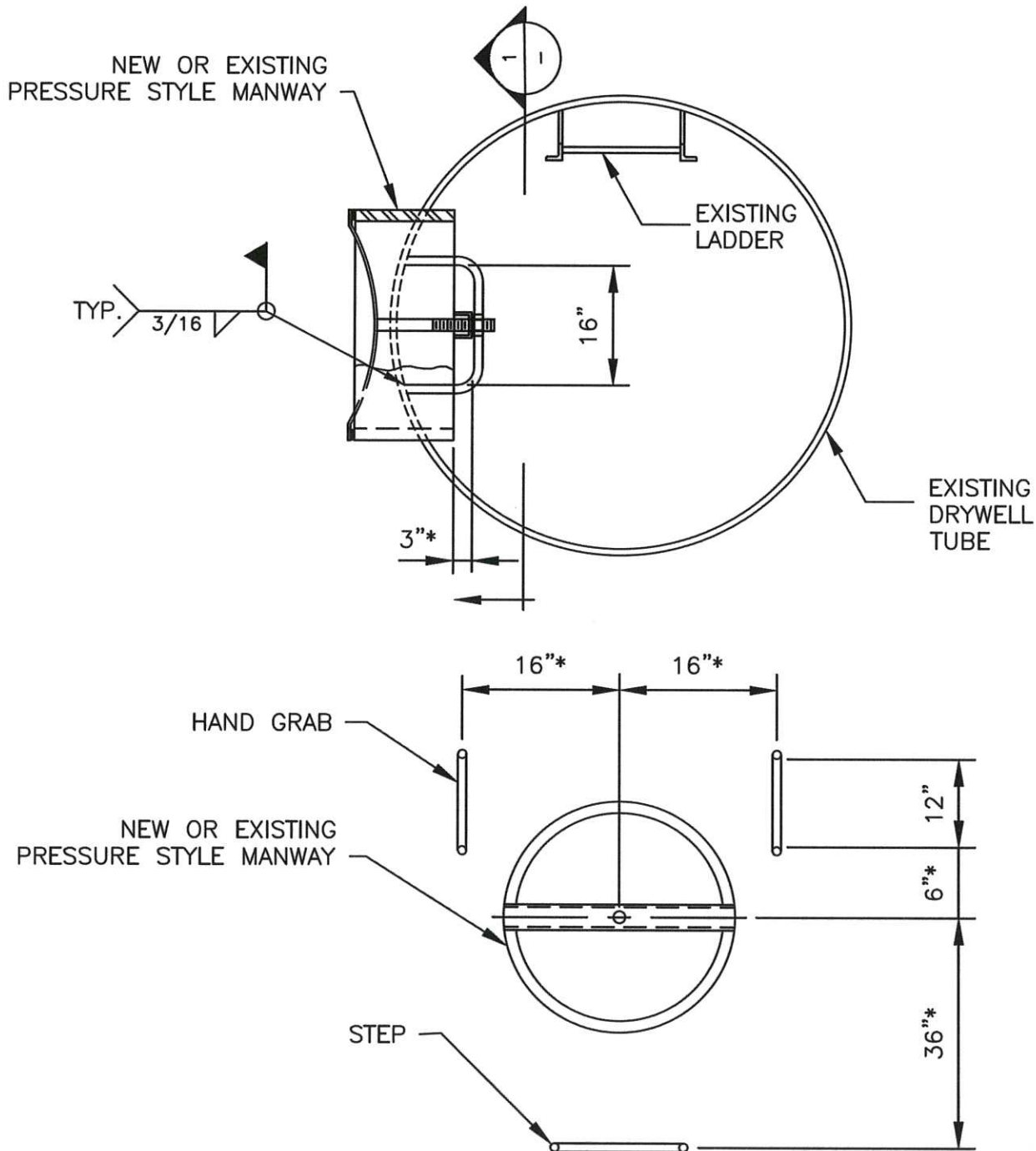
DATE DECEMBER 2017

CHECKED BY

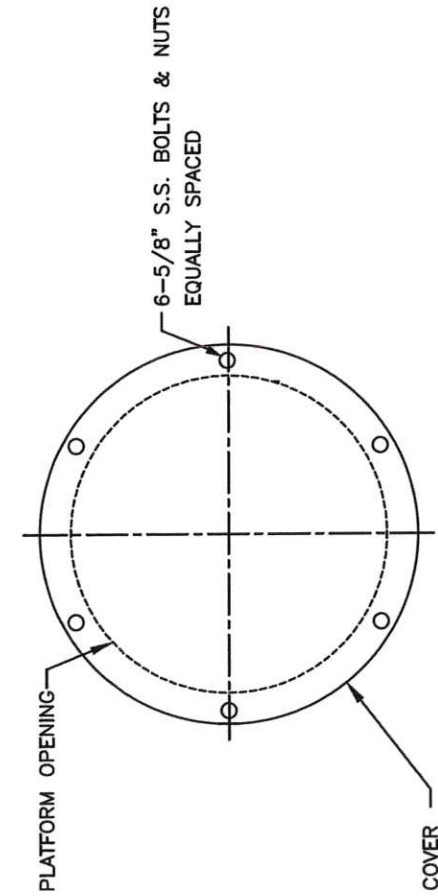
DATE

NOTES:

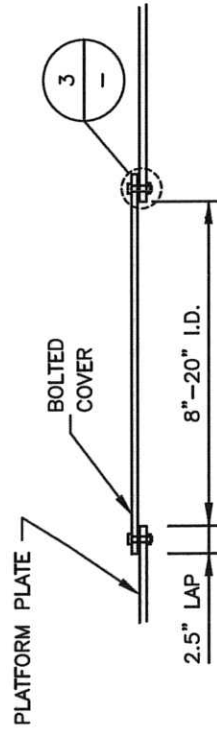
1. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. STEP AND HAND GRABS SHALL BE FABRICATED FROM 3/4" DIAMETER BENT BARS WITH A 1.5" MINIMUM INSIDE BEND RADIUS.
4. DIMENSIONS WITH AN ASTERISK (*) ARE APPROXIMATE; THE EXACT LOCATION TO BE APPROVED BY THE ENGINEER.



1
-
ELEVATION AT MANWAY

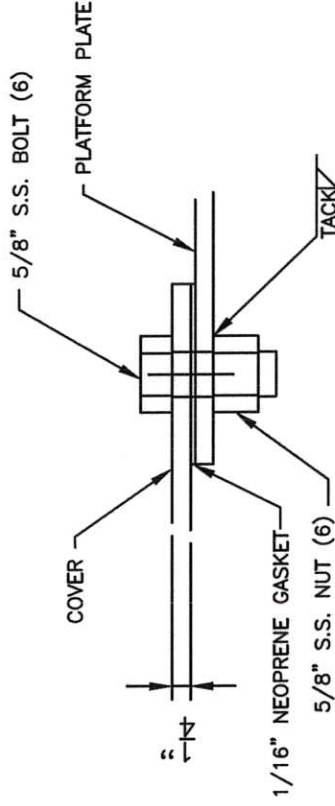


1 PLAN VIEW



2 SECTIONAL ELEVATION

- NOTES:**
- COVER PLATE TO BE 1/4" MINIMUM A36 STEEL WITH A DIAMETER 5" LARGER THAN THE DIAMETER OF THE FLOOR OPENING.
 - ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
 - ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



3 CONNECTION DETAIL

KLM ENGINEERING, INC.
 1976 Wooddale Drive
 Suite 4
 Woodbury, MN 55125
 (651) 773-5111
 Fax (651) 773-5222

PLATFORM FLOOR
 CONTAINMENT PLATE

DATE	JANUARY 2018
KLM DRAWING NO.	45



KLM ENGINEERING, INC.

1976 Wooddale Drive
Suite 4
Woodbury, MN 55125
(651) 773-5111
Fax (651) 773-5222



KLM PROJECT NO.

KLM DRAWING NO. 54

SUBJECT OVERFLOW PIPE SCREEN RETAINER

DRAWN BY

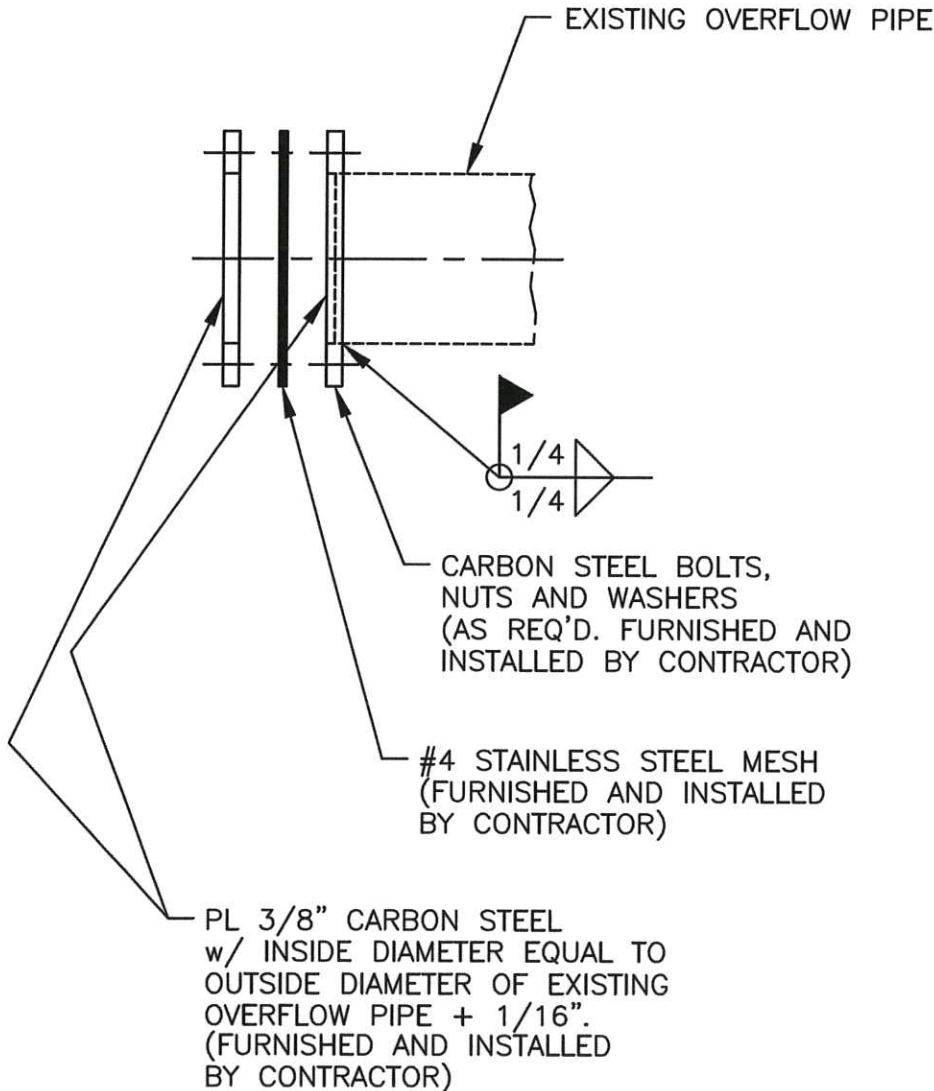
DATE JANUARY 2018

CHECKED BY

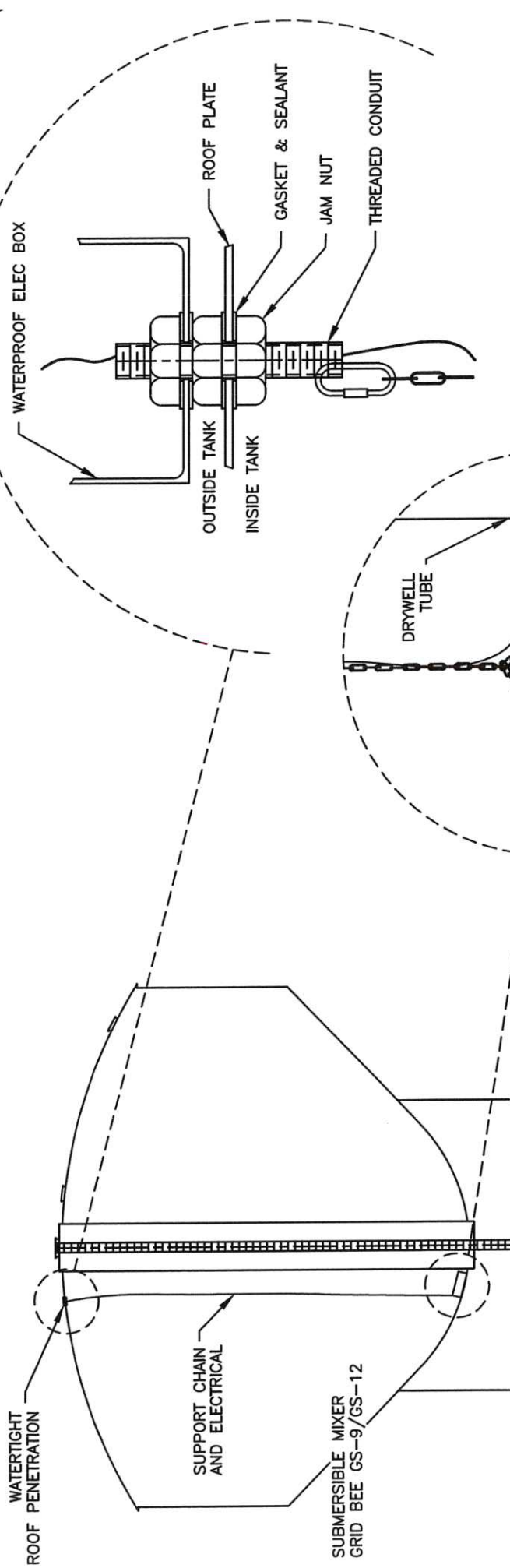
DATE

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING SIZE REQUIREMENTS.
2. ALL WELDING SHALL BE PER AWS D1.1 LATEST EDITION.
3. ALL WELDING AS SHOWN TO BE DONE BY CONTRACTOR.



ELEVATION



DETAIL VIEW

SECTION VIEW

DETAIL VIEW

- INSTALLER NOTES:**
1. INSTALL MIXER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 2. INSTALL IN ACCORDANCE WITH STATE ELECTRICAL CODES AND STATE REGULATIONS.
 3. INSTALLER PROVIDE ALL WIRING, CONDUIT, DEVICES, BREAKERS, AND SWITCHES.
 4. WATERTIGHT PENETRATION IN ROOF AT THE DIRECTION OF THE ENGINEER.
 5. COORDINATE WITH ENGINEER FOR DESIGN OF PERMANENT SUPPORT BRACKETS, IF REQUIRED.

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NACE SP0178-2007
(formerly RP0178-2003)
Item No. 21022

Standard Practice

Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service

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Foreword

When specifying tanks and vessels that are to be internally lined to control corrosion and prevent product contamination, special design, fabrication, and surface finishing practices must be considered to obtain the desired performance of these linings for immersion service. As the corrosiveness of the product increases, the design and fabrication of the tank or vessel becomes more critical relative to the performance of the lining.

This standard presents standard practices for the design, fabrication, and surface finish of metal tanks and vessels that are to be lined for corrosion resistance and to prevent product contamination. The standard explains how the standard practices govern the quality of lining applications. Appendix A contains illustrations depicting both good and bad practices for tanks and vessels to be lined, and Appendix B contains a list of recommended responsibilities to ensure that an acceptable lining application is achieved. Appendix C contains written and graphic descriptions of five degrees of surface preparation of welds in tanks and vessels that may be specified prior to lining.⁽¹⁾

This standard is intended for use or reference by end users, lining specifiers, lining applicators, lining manufacturers, and contracting authorities involved in the surface preparation or lining installation in tanks and vessels intended for chemical immersion service.

This standard practice was originally prepared in 1978 by NACE International Task Group (TG) T-6A-29, a component of Unit Committee T-6A on Coating and Lining Materials for Immersion Service, in collaboration with Unit Committee T-6H on Application and Use of Coatings for Atmospheric Service. The standard was revised in 1989 by TG T-6G-27, a component of Unit Committee T-6G on Surface Preparation for Protective Coatings, and was reaffirmed in 1991 and 1995. It was reaffirmed in 2003 by Specific Technology Group (STG) 04 on Coatings and Linings, Protective: Surface Preparation. The standard was revised in 2007 by TG 295 on Lining, Tanks and Vessels for Immersion Service: Fabrication Details, Surface Finish Requirements, and Proper Design Considerations—Review of NACE Standard RP0178-2003. This TG is administered by STG 04. It is also sponsored by STG 02 on Coatings and Linings, Protective: Atmospheric; STG 03 on Coatings and Linings, Protective: Immersion and Buried Service; and STG 43 on Transportation, Land. This standard is issued by NACE International under the auspices of STG 04.

⁽¹⁾ The visual comparator mentioned in Appendix C is a molded plastic replica that illustrates various degrees of surface finishing for welds prior to coating or lining. Full-seam welds, skip welds, butt welds, lap welds, and others are depicted. For more information contact the NACE FirstService Department, 1440 South Creek Drive, Houston, TX 77084-4906.

NACE International gratefully acknowledges the contributions of the following companies in the preparation of the welding samples and the fabrication of the die from which the plastic replicas have been molded:

Ausimont USA, Inc.,⁽²⁾ Thorofare, NJ
CenterPoint Energy,⁽³⁾ Houston, TX
S.G. Pinney & Associates, Inc.,⁽⁴⁾ Port St. Lucie, FL
The Sherwin-Williams Company,⁽⁵⁾ Cleveland, OH

NACE also gratefully acknowledges the assistance of KTA-Tator Inc.,⁽⁶⁾ Pittsburgh, PA, in developing the weld pattern that was used to mold the plastic replica of weld samples.

In NACE standards, the terms *shall*, *must*, *should*, and *may* are used in accordance with the definitions of these terms in the *NACE Publications Style Manual*, 4th ed., Paragraph 7.4.1.9. *Shall* and *must* are used to state mandatory requirements. *Should* is used to state something considered good and is recommended but is not mandatory. *May* is used to state something considered optional.

⁽²⁾ Ausimont USA, Inc., 10 Leonards Lane, Thorofare, NJ 08086.

⁽³⁾ CenterPoint Energy, P.O. Box 1325, Houston, TX 77251-1325.

⁽⁴⁾ S.G. Pinney & Associates, Inc., Corporate Office, 1326 S.W. Biltmore St., Port St. Lucie, FL 34983.

⁽⁵⁾ The Sherwin-Williams Company, 101 Prospect Avenue N.W., Cleveland, OH 44115.

⁽⁶⁾ KTA-Tator, Inc., 115 Technology Drive, Pittsburgh, PA 15275.

**NACE International
Standard Practice**

**Design, Fabrication, and Surface Finish Practices for
Tanks and Vessels to Be Lined for Immersion Service**

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Section 1: General

1.1 This standard presents standard practices for the design, fabrication, and surface finish of tanks and vessels to be lined for immersion service. Tanks and vessels may be lined for corrosion control or to prevent product contamination.

1.1.1 Appendix A (mandatory) contains illustrations depicting both good and bad practices for tanks and vessels to be lined for immersion service.

1.1.2 Appendix B (nonmandatory) contains a list of recommended responsibilities of the purchaser (user), designer, fabricator, lining applicator, and inspector to ensure that an acceptable lining application is achieved.

1.1.3 Appendix C (nonmandatory) contains written and graphic descriptions of five degrees of surface preparation of welds in tanks and vessels that may be specified prior to lining. The written descriptions of the five degrees of surface preparation of welds in Appendix C take precedence over the graphics and the companion visual comparator. The graphics are only

pictorial representations of welds and grinding finishes and are not intended to be representative of the integrity of the welds. The "weld condition prior to finishing" is not a typical weld; it is only intended to illustrate defects in welds that must be corrected prior to lining.

1.2 Good welding practices and welding codes govern the integrity of the tank and vessel welds; this standard only addresses surface preparation of the welds for the purpose of lining the tank or vessel for immersion service.

1.3 Other design and construction codes or standards may be used to complement the details given here. When applicable, the requirements of such other codes or standards shall be considered. A partial list of such codes and standards can be found in the Bibliography.

1.4 These standard practices may be used in the design, fabrication, and surface finish of tanks and vessels for services other than immersion, such as dry bulk storage of solid materials.

Section 2: Definitions

Lining: A coating or layer of sheet material adhered to or in intimate contact with the interior surface of a container used to protect the container against corrosion by its contents and/or to protect the contents of the container from contamination by the container material. For the purposes of this standard, *lining* refers to a surface barrier, usually a thin film less than 500 μm (20 mil) thick applied as either a lining or a coating. In common usage, the terms *coating* and *lining* are interchangeable, but in this standard, only the term *lining* is used. The requirements contained herein may or may not apply to heavier, thick-film linings, sheet linings, trowel-applied and pumped-into-place finishes, plasma,

flame-sprayed linings, fiber-reinforced plastic linings, or similar lining materials.

Surface Finish: The degree of smoothness of a surface produced by the removal of sharp edges and the appropriate surface preparation of welds and other rough areas. The term *surface finish* is also used to characterize the degree of smoothness that is necessary to attain a surface to which the lining can be applied satisfactorily in accordance with the lining specification.

Section 3: Design Practices

3.1 Accessibility

3.1.1 All surfaces of the tank or vessel interior shall be readily accessible for surface preparation and lining application (see Figures A1 through A10, Appendix A).

3.1.2 The manway diameter for working entrance and safety reasons during the lining application shall be as large as practical for the tank or vessel being lined.

3.1.2.1 If possible, at least one manway shall be located near ground (working) level, except in

tanks or vessels designed to be buried below grade.

3.1.3 Additional manways and openings should be provided as needed to facilitate ventilation. These must meet safety requirements.

3.2 Joints

3.2.1 Continuous butt-welded joints shall be used whenever possible (see Figure A5, Appendix A).

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3.2.2 Rivets shall not be used.

3.2.3 The use of internal bolted connections should be avoided to the fullest extent possible.

3.2.4 Continuous lap-welded joints may be used but are not preferred. For sheet lining material, this type of construction may not be acceptable.

3.3 Connections

3.3.1 All connections to the tank or vessel shall be flanged.

3.3.2 Threaded connections should not be used in tanks and vessels operating in corrosive environments (see Figure A4, Appendix A). However, if threaded connections cannot be avoided in corrosive environments, these parts shall be fabricated of corrosion-resistant materials, or constructed as shown in Figure A10, Appendix A.

3.3.2.1 CAUTION: Dissimilar metal (galvanic) corrosion occurs when, for example, an alloy is used to replace the steel bottom of a tank, or in a similar circumstance when alloy appurtenances must be part of the construction of a vessel. If a lining is then applied to the steel and part of the alloy (usually 150 to 610 mm [5.9 to 24 in.]), any discontinuity in the lining exposes a small anode surface. Once corrosion starts, it progresses rapidly because of the large exposed alloy cathodic area to the much smaller anodic area. Without the lining, galvanic corrosion causes the steel to corrode at the weld area, but at a much slower rate. The recommended practice is to apply the lining to all of the alloy as well as the steel, thereby eliminating the possible occurrence of a large-cathode-to-small-anode surface.

3.3.3 Nozzle connections to be lined shall be as short as possible and be a minimum of 50 mm (2 in.) in diameter (see Figure A4, Appendix A). Connections less than 50 mm (2 in.) in diameter shall be suitably attached through a reducing flange (see Figure A10, Appendix A). When trowel-applied thick-film linings are required, additional nozzle inside diameter shall be allowed for lining thickness.

3.4 Appurtenances Inside the Tank or Vessel

3.4.1 The standard practices in Sections 3, 4, and 5 shall apply to any item to be installed inside a tank or vessel that is to be lined. Such appurtenances include, but are not limited to, agitators, anti-swirl baffles, outlet connections, gauging devices, vortex breakers, and internal piping.

3.4.2 If appurtenances inside the tank or vessel, including nuts and bolts, cannot be lined, they shall be made of corrosion-resistant materials. (CAUTION: See Paragraph 3.3.2.1.)

3.4.3 If bolted connections are necessary and cannot be made of corrosion-resistant materials, the mating surfaces shall be lined before assembly. Gaskets shall be used on mating surfaces and the sealing surfaces of nuts and bolts to protect the lining.

3.4.4 Dissimilar metals shall be electrically isolated from the steel tank or vessel surface whenever possible. Where dissimilar metals are used, selection shall be such that the galvanic effect is minimized. Other corrosion mitigation methods may be required (see Figure A8, Appendix A).

3.4.5 Heating elements shall be offset from the tank or vessel surface to provide access for surface preparation, application, inspection, and cleaning. Elements shall be positioned so as not to damage the lining system.

3.5 Structural Reinforcement Members

3.5.1 Structural support members should be installed on the exterior of the tank or vessel. However, if such members are installed internally, they shall be fabricated of simple shapes such as smooth, round bars or pipe for ease of applying the lining material.

3.5.2 The use of internal flanged connections, stiffening rings, reinforcement pads, angles, channels, I-beams, and other complex shapes should be avoided. If they must be installed internally, these members shall be fully welded and welds and sharp edges ground to a radius of at least 3.2 mm (0.13 in.) or as agreed between the tank or vessel fabricator, tank or vessel owner, and lining applicator (see Figures A1 and A6, Appendix A).

3.6 Heat Sinks

3.6.1 Heated, forced curing of lining systems is often preferred if not specifically required. During tank or vessel design and fabrication, especially with field-erected units, consideration must be given to avoiding or minimizing heat sink areas. Such areas might include opposite saddles or support lugs, flat bottoms on foundations, and stiffening rings.

3.6.2 These situations may be addressed either by tank or vessel design or by construction or insulation of the foundation or supports. Another possible solution is the use of temporary constructions, such as false floors or temporary shelters, to achieve uniform heating and curing.

Section 4: Fabrication Practices

4.1 All design practices in Section 3 shall apply to all fabrication.

4.2 All welding shall be continuous. Intermittent or spot welding shall not be allowed.

4.3 Fillets and corners must be accessible for grinding.

4.4 Field tanks fabricated for use with high-heat-cured linings (e.g., unmodified phenol formaldehyde thermosetting linings) should have bottoms suitably insulated and installed on properly drained foundations to facilitate proper cure of the lining on the floor of the tank. Because the sand-filled earthen foundation, concrete pad, or other similar foundation is a poor insulator, some means must be considered prior to the application of the lining either to override the heat sink or to distribute the heat uniformly. This may be accomplished in several ways:

(a) with the use of properly sized heaters;

(b) by placing the tank on a concrete pad topped with a 100-mm (4-in.) layer of vermiculite concrete;

(c) by insulating with a high-compressive-strength structural grade insulation between the tank bottom and foundation;

(d) by installing an internal temporary false bottom approximately 1.5 m (5.0 ft) above the floor of the tank prior to the final high-temperature bake; or

(e) by other suitable means that practically and effectively ensure a properly cured lining on the tank floor.

Section 5: Surface Finish Practices

5.1 Sharp edges shall be ground to a smooth radius of at least 3.2 mm (0.13 in.) or as agreed between the tank or vessel fabricator, tank or vessel owner, and lining applicator.

5.2 Tank and vessel internal surfaces to be lined shall not be marred by gouges, handling marks, deep scratches, metal stamp marks, slivered steel, or other surface flaws. Flaws shall be repaired by welding or grinding, as appropriate.

5.2.1 Limits on surface flaw depth and geometry shall be set by agreement between the tank or vessel fabricator, tank or vessel owner, and lining applicator.

5.2.2 All restorative welding shall be performed according to applicable tank or vessel design codes, approved job-specific procedures, or both.

5.3 All rough welds shall be ground to remove sharp edges and other such irregularities (see Figure A2, Appendix A). Chipping may be used to remove sharp edges if followed by grinding. See Appendix C for written and graphic descriptions of five degrees of surface finishing of welds that may be specified preparatory to the lining of tanks and vessels.

5.3.1 The amount of grinding performed shall be judicious and performed only to the extent necessary to

prepare the weld surface and surrounding metal surfaces in accordance with the specification. Over-grinding, which would result in decreasing the wall thickness or the integrity of the weld beyond the limitations imposed by good welding practices, applicable welding codes, or tank or vessel ratings, shall be avoided.

5.4 Automatic machine welds may be acceptable as dictated by the specifications for film continuity.

5.5 All weld spatter and arc strikes must be removed. Chipping may be used if followed by grinding or the use of an abrasive disc.

5.6 If an anti-spatter material is applied adjacent to the weld area prior to welding, the anti-spatter material shall be one that is readily removable. Anti-spatter materials shall be removed prior to abrasive blasting.

5.7 When checking weld continuity, the tank or vessel fabricator shall avoid the use of oils, lubricants, or other foreign materials that would leave a contaminating residue not easily removed by abrasive blasting.

5.8 Surfaces shall be cleaned and decontaminated as required by the governing lining application specification(s).

Bibliography

API⁽⁷⁾ Standard 650 (latest revision). "Welded Steel Tanks for Oil Storage." Washington, D.C.: American Petroleum Institute (API).

API RP 652 (latest revision). "Lining of Aboveground Petroleum Storage Tank Bottoms." Washington, D.C.: API.

ASME⁽⁸⁾ Boiler and Pressure Vessel Code (latest revision). New York, NY: ASME.

Directive 97/23/EC (latest revision). "Pressure Equipment Directive (PED)." Brussels, Belgium: European Commission.⁽⁹⁾

NACE Standard SP0294 (latest revision). "Design, Fabrication, and Inspection of Storage Tank Systems for Concentrated Fresh and Process Sulfuric Acid and Oleum at Ambient Temperatures." Houston, TX: NACE.

⁽⁷⁾ American Petroleum Institute (API), 1220 L Street, NW, Washington, D.C. 20005-4070.

⁽⁸⁾ ASME International (ASME), Three Park Avenue, New York, NY 10016-5990.

⁽⁹⁾ European Commission (EC), Rue de la Loi 200, B-1049 Brussels, Belgium.

**APPENDIX A:
Illustrations of Design, Fabrication, and Surface Finish Practices for Metal Tanks and Vessels to Be Lined for Immersion Service**

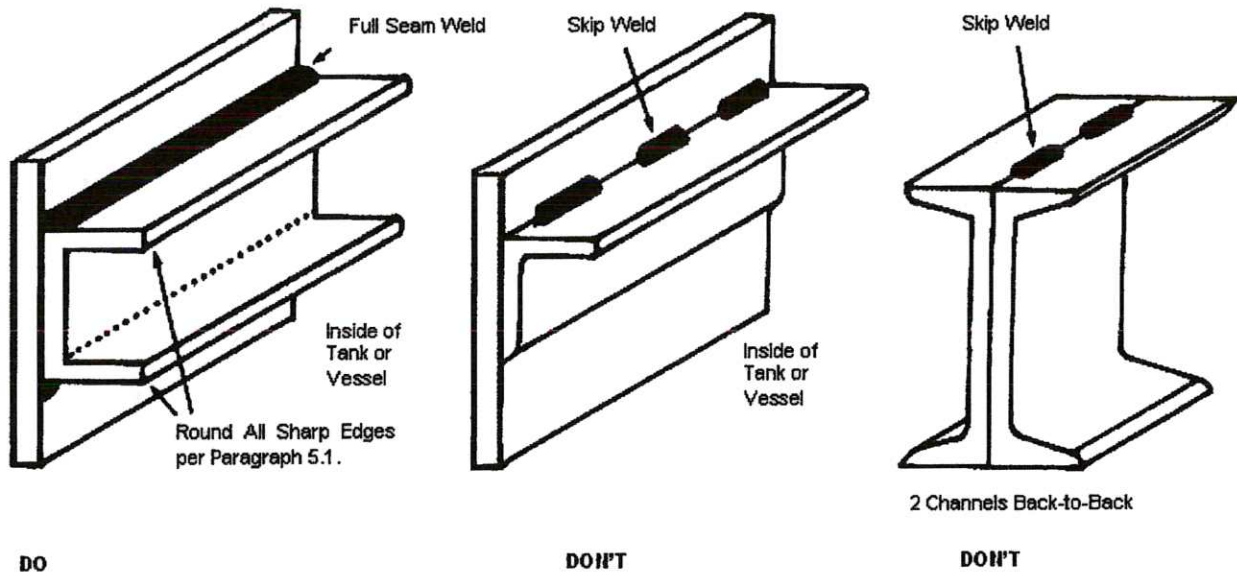


FIGURE A1

All construction involving pockets or crevices that do not drain or that cannot be properly abrasive blasted and lined shall be avoided.

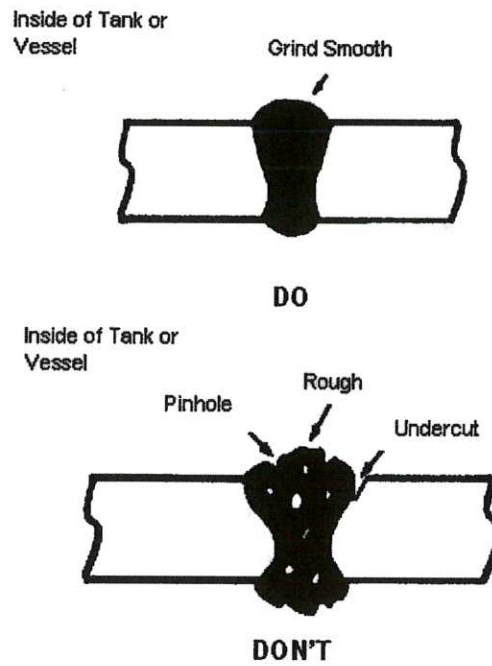


FIGURE A2

All joints shall be continuous full-penetration porosity-free welds. In tanks and vessels that require a 100% holiday-free lining, all welds must be smooth with no holes, high spots, lumps, or pockets. Grinding is required to eliminate sharp edges and high spots. Weld metal shall be used to fill in undercut or pits.

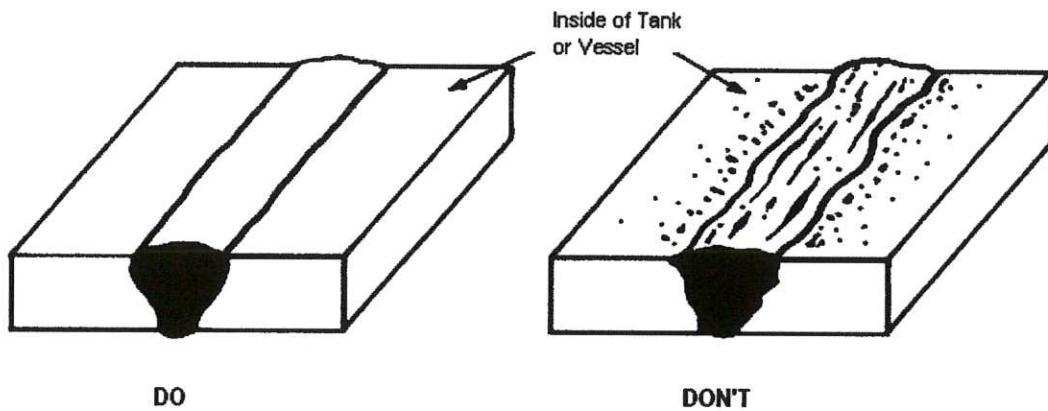


FIGURE A3

All weld spatter shall be removed.

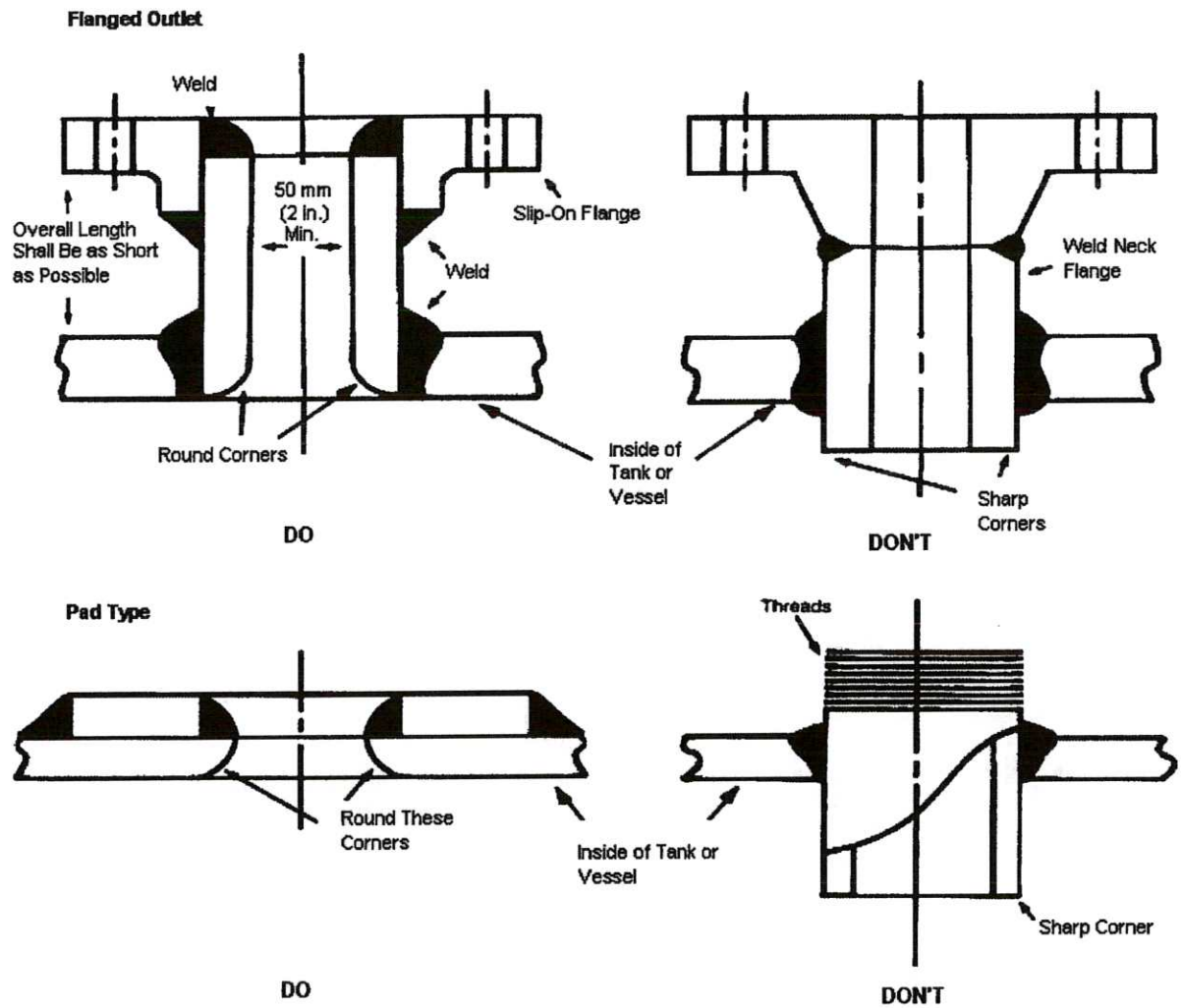


FIGURE A4

The outlets shall be flanged or pad-type rather than threaded. Within pressure limitations, slip-on flanges are preferred because the inside surface of the attaching weld is readily available for rounding edges and grinding. If operating pressure dictates the use of weld neck flanges, the inside surface of the attaching weld is in the throat of the nozzle, making repair of surface irregularities by grinding rather difficult.

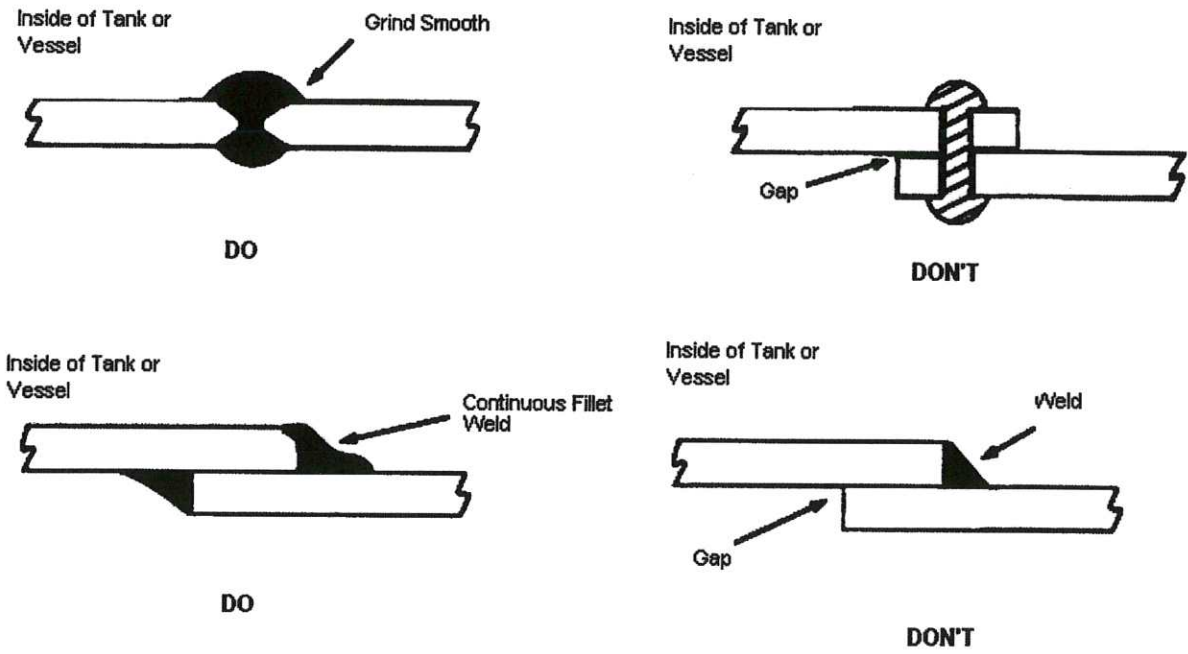


FIGURE A5

Butt welding shall be used whenever possible rather than lap welding or riveted construction.

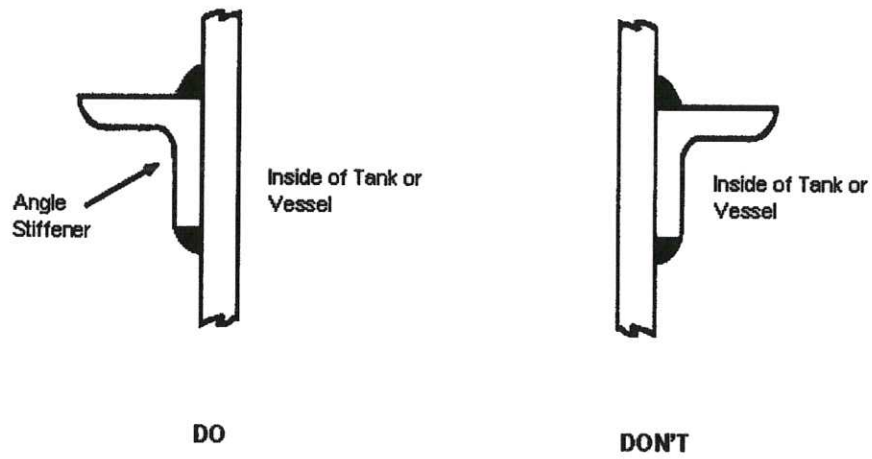


FIGURE A6

Stiffening members should be on the outside of the tank or vessel.

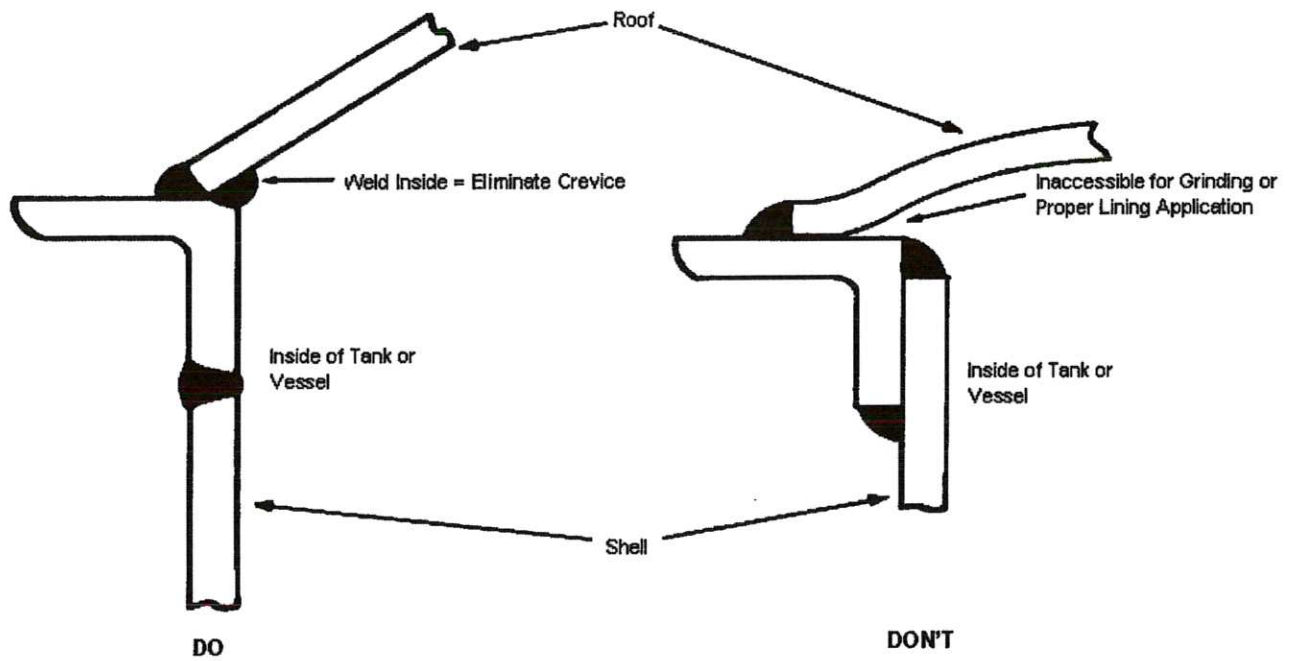


FIGURE A7

Roof-to-Shell Joint. Eliminate crevice and lap weld at roof-to-shell joint in a tank or nonpressure vessel.

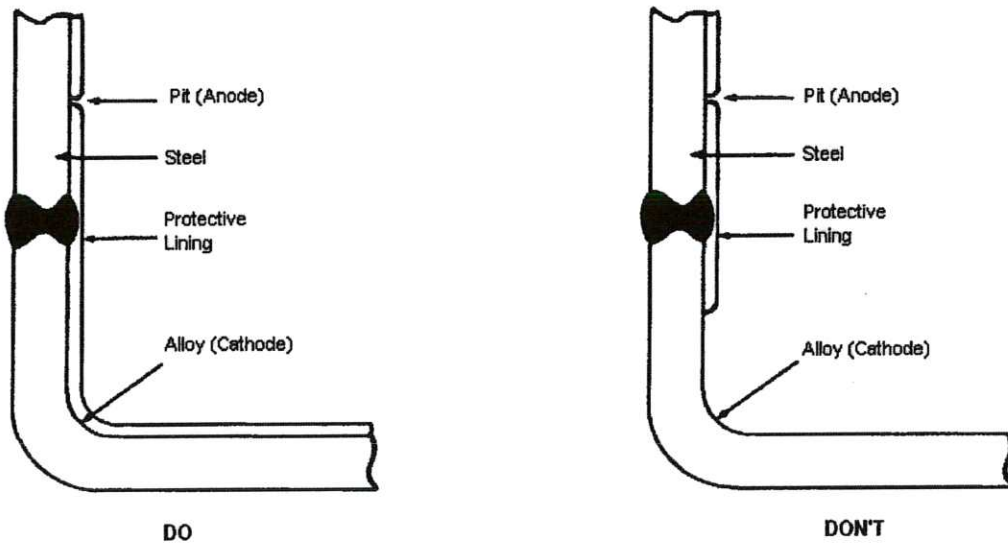


FIGURE A8

Dissimilar metal (galvanic) corrosion occurs when, for example, an alloy is used to replace the steel bottom of a tank, or, in a similar circumstance, when alloy appurtenances must be a part of the construction of a vessel. If a lining is then applied to the steel and part of the alloy (usually 150 to 610 mm [5.9 to 24 in.]), any discontinuity in the lining exposes a small anode surface. Once corrosion starts, it progresses rapidly because of the large exposed alloy cathodic area to the much smaller anodic area. Without the lining, galvanic corrosion causes the steel to corrode at the weld area, but at a much slower rate. The recommended practice is to apply lining to all of the alloy as well as the steel, thereby eliminating the possible occurrence of a large-cathode-to-small-anode surface.

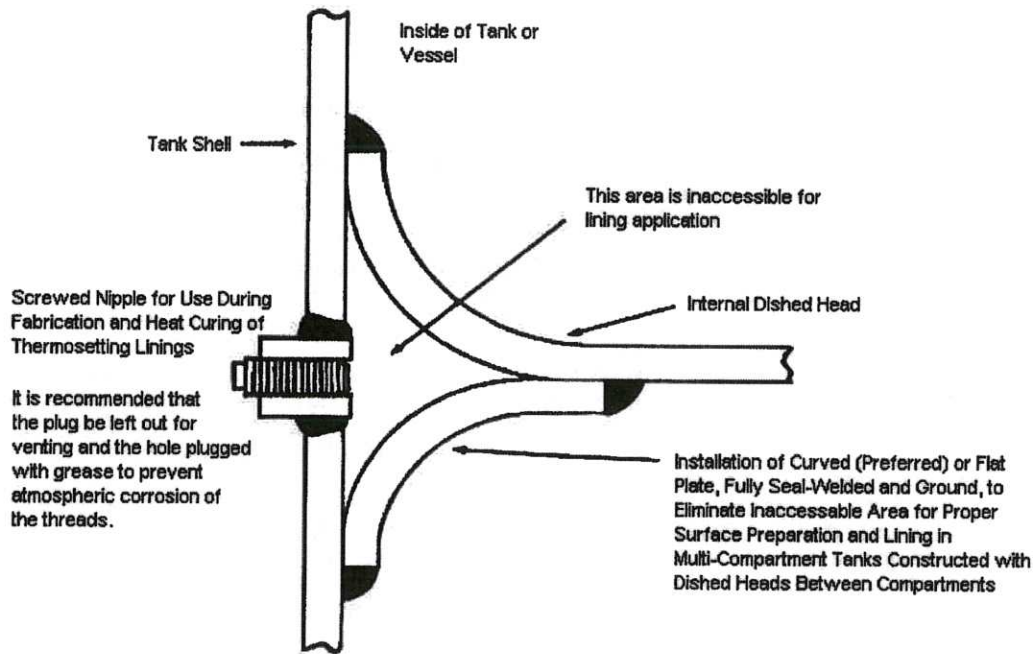


FIGURE A9

A technique (detail of fabrication) to allow for good continuity of lining application for inaccessible areas such as those in multicompart tanks or vessels.

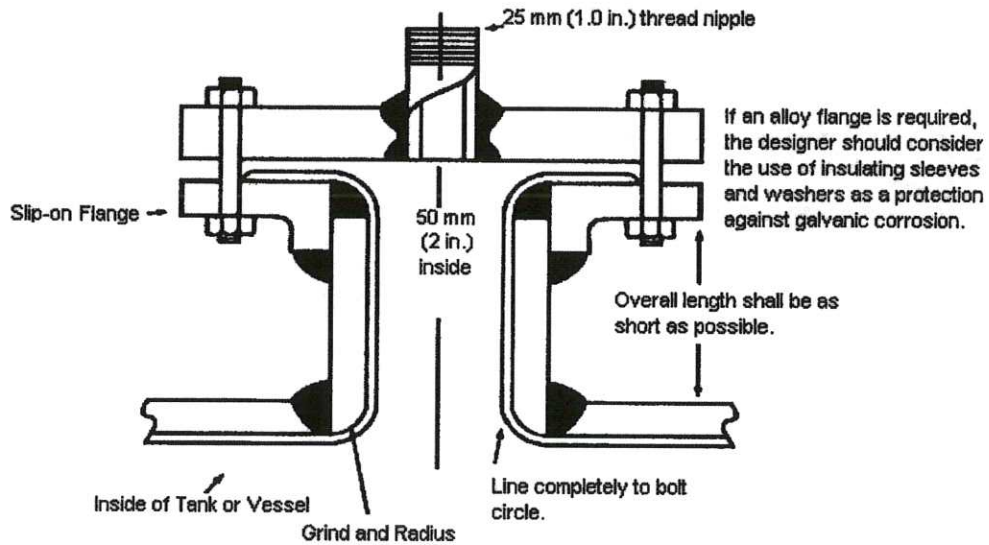


FIGURE A10

Minimum 50-mm (2-in.) diameter nozzle required for most thin-film linings. Thicker-film linings may require a larger-diameter nozzle. This diagram also illustrates fabrication practice where a threaded connection is required in a tank or vessel that requires a holiday-free lining.

APPENDIX B: Recommended Responsibilities

This appendix is a list of recommended responsibilities that should be assigned to the purchaser, designer, fabricator, lining applicator, and inspector in order to obtain a properly designed and fabricated tank or vessel for interior lining.

B1.1 Joint Responsibilities

B1.1.1 The purchaser, designer, fabricator, lining applicator, and inspector(s) should review and agree to the requirements involved before contractual agreements are made.

B1.1.2 The purchaser, in agreement with the fabricator and lining applicator, should assign responsibility for inspection of fabrication, surface finish, and lining application, and such responsibility should be defined in all contracts.

B1.2 Responsibilities of the Purchaser (Owner or User)

B1.2.1 The purchaser should be responsible for specifying and/or approving the detail requirements for design, fabrication, and surface finish to all parties concerned.

B1.2.1.1 The detailed requirements should be fully described in writing and include drawings of the tank or vessel to be fabricated and lined and service requirements.

B1.2.1.2 The purchaser should advise the designer, fabricator, lining applicator, and all inspectors of the detailed requirements, including time schedules, inspection, and acceptable requirements, in writing.

B1.3 Responsibilities of the Designer

B1.3.1 The designer should be responsible for including the required fabrication and surface details on all sketches and drawings related to the tank or vessel.

B1.4 Responsibilities of the Fabricator

B1.4.1 The fabricator should be responsible for adhering to the fabrication and surface finish details shown on the working drawings and described in the tank or vessel specifications.

B1.4.2 Responsibility for an inspection of the blast or any additional welding, grinding, or surface finishing that may be revealed by the surface preparation for lining, plus any subsequent reblasting, should be defined in the lining contract.

B1.4.3 The fabricator, when checking the quality of the weld, should use only those materials that can be readily and thoroughly removed by the fabricator after completion of the inspection procedure.


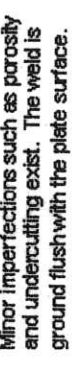

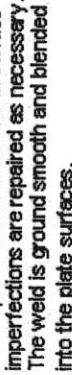

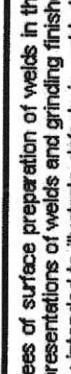
B1.5 Responsibilities of the Lining Applicator

B1.5.1 Responsibility for additional welding, grinding, or surface finishing that may be revealed by the surface preparation for lining, plus any subsequent reblasting, should be defined in the lining contract.

B1.6 Responsibilities of the Inspector(s)

B1.6.1 A qualified inspector whose qualifications and affiliation are acceptable to all parties should be responsible for the verification of fulfillment of design, fabrication, and surface finish requirements.



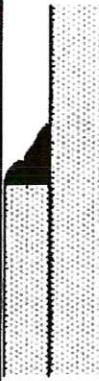





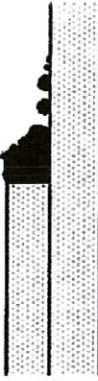
Appendix C—Written and Graphic Descriptions of Various Degrees of Surface Finishing of Welds That May Be Specified in Preparation for Lining of Tanks and Vessels (A)

NACE Weld Preparation Designation	Type of Grinding	Butt Weld	Fillet Welded Tee Joint	Lap Weld
A	Ground flush and smooth; free of all defects. ^(a)	Weld spatter is removed and all surface imperfections are repaired as necessary. The weld is ground flush with the plate surface. 	Not Applicable	Not Applicable
B	Ground flush	Minor imperfections such as porosity and undercutting exist. The weld is ground flush with the plate surface. 	Not Applicable	Not Applicable
C	Ground smooth; free of all defects. ^(a)	Weld spatter is removed and all surface imperfections are repaired as necessary. The weld is ground smooth and blended into the plate surfaces. 	Not Applicable	Not Applicable
			Weld spatter is removed and all surface imperfections are repaired as necessary. The weld is ground smooth and blended into the plate surfaces. 	Not Applicable
			Weld spatter is removed and all surface imperfections are repaired as necessary. The weld is ground smooth and blended into the plate surfaces. 	Fillet weld between the two plates. Weld spatter is removed and all surface imperfections are repaired as necessary. The weld is ground smooth and blended into the plate surfaces. 

The written descriptions of the various degrees of surface preparation of welds in the appendices of this standard take precedence over the graphics and the companion visual comparator. The graphics are only pictorial representations of welds and grinding finishes and are not intended to be representative of the integrity of the welds. The "weld condition prior to finishing" is not a typical weld; it is only intended to illustrate defects in welds that must be corrected prior to lining. Good welding practices and welding codes govern the integrity of the tank and vessel welds; this standard only addresses surface preparation of the welds for the purpose of lining the tank or vessel for immersion service.

The visual comparator mentioned in Appendix C is a molded plastic replica that illustrates various degrees of surface finishing for welds prior to coating or lining. Full-seam welds, skip welds, butt welds, lap welds, and others are depicted. For more information, contact the NACE International FirstService Department, 1440 South Creek Dr., Houston, Texas 77084-4906 (telephone +1 281 228-6200).

Appendix C (Continued)⁽¹⁾

NACE Weld Preparation Design	Type of Grinding	Butt Weld	Fillet Welded Tee Joint	Lap Weld
D	Ground smooth and blended. [Ⓢ]	<p>Minor imperfections such as porosity and undercutting exist. Weld spatter is removed; welds are then ground smooth and blended into the plate surfaces.</p> 	<p>Minor imperfections such as porosity and undercutting exist. Weld spatter is removed; welds are then ground smooth and blended into the plate surfaces.</p>  <p>Inside of Tank or Vessel</p>	<p>Minor imperfections such as porosity and undercutting exist. Weld spatter is removed; welds are then ground smooth and blended into the plate surfaces.</p> 
E	Minimal	<p>Sharp projections on the weld bead, slag, and weld spatter are removed.</p> 	<p>Sharp projections on the weld bead, slag, and weld spatter are removed.</p>  <p>Inside of Tank or Vessel</p>	<p>Sharp projections on the weld bead, slag, and weld spatter are removed.</p> 
Weld Condition Prior to Finishing			 <p>Inside of Tank or Vessel</p>	

⁽¹⁾ The written descriptions of the various degrees of surface preparation of welds in the appendix of this standard take precedence over the graphics and the companion visual comparator. The graphics are only pictorial representations of the welds and grinding finishes and are not intended to be representative of the integrity of the welds. The "as is" original weld is not a typical weld; it is only intended to illustrate defects in welds that must be corrected prior to coating and lining. Good welding practices and welding codes govern the integrity of the weld; this standard only addresses surface preparation of the welds for the purpose of coating and lining for immersion service.

Ⓢ Abrasive blasting in preparation for coating may reveal additional porosity and undercutting. Some applicators request the fabrication to blast the welds to reveal these imperfections prior to requesting inspection of the grinding by the lining applicator. Responsibility for repair of imperfections so revealed should be resolved in the pre-job conference.

The visual comparator mentioned in Appendix C is a molded plastic replica that illustrates various degrees of surface finishing for welds prior to coating or lining. Full-seam welds, skip welds, butt welds, lap welds, and others are depicted. For more information, contact the NACE International FirstService Department, 1440 South Creek Dr., Houston, Texas 77084-4906 (telephone +1 281/228-6200).

APPENDIX D

INSPECTION & EVALUATION METHODS

1.0|INSPECTION AND EVALUATION METHODS

Some or all of the following procedures were performed as applicable.

1.1|Methods

1.1.1 The inspection of the base metal and coatings on interior and exterior surfaces included only areas accessible without scaffolding or special rigging. Where possible, the base metal and coating on the interior wet surfaces were examined from either a rubber raft while the tank was being drained, by a Remote Operated Vehicle (ROV) with the tower in service, or with both.

1.1.2 Tank plate thickness was measured at random locations on the liquid holding shell. The overall structural condition of the tank was visually examined.

1.1.3 No structural analysis was done to determine if the tank design complies with the AWWA D100-11 Standard for “Welded Carbon Steel Tanks for Water Storage.” However, any observed non-conformance to the AWWA D100-11 standard is noted in this report.

1.1.4 Although compliance with OSHA regulations was not a part of this inspection, any unsafe conditions or violations of current OSHA regulation that were observed are noted in this report.

1.2|Examination and Evaluation Techniques

Some or all of the following procedures were performed as applicable.

1.2.1|Site

The tank site was evaluated for proper drainage conditions affecting access and lead paint abatement during reconditioning.

Also, the following site dimensions were obtained: distance to fence(s), power lines, owner buildings, public property, private property/buildings, school/playgrounds, public parks, and other property.

1.2.2|Foundations

The tank concrete foundation(s) were/was visually examined for cracks, spalling, conditions of grout, indications of distress/settlement, and elevation above grade.

1.2.3|Tank Plate Thickness

Plate thickness measurements were taken using ultrasonic methods (UTM). The readings were taken using a digital readout Nova D-100 Ultrasonic Thickness Gage that has a dual element probe (transducer). The probe’s transmitter element sends a short ultrasonic pulse to the material. The pulse, reflected as an echo from the opposite side of the plate

returns to the probe's receiver element. The round-trip time is directly related to the material's thickness.

1.2.4|Coating Thickness

Interior and exterior coatings, where accessible, were tested in accordance with Steel Structures Painting Council SSPC-PA2-82 "Measurement of Dry Film Thickness with Magnetic Gages" using PosiTector-6000-F1 Type 2 magnet flux gages with a fixed probe.

1.2.5|Coating Adhesion

Adhesion testing of the coating to the steel was performed by ASTM D-3359: Shear Adhesion Test, Measuring Adhesion by Tape Test. In addition, subjective coating adhesion evaluation was performed using a penknife.

1.2.6|Coating Cure

The cure of the interior wet coating was evaluated by ASTM D-5402-93 Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs and/or with the manufacturer's recommended field method/industry standard procedures.

1.2.7|Coating Serviceability

The estimated remaining coating life or serviceability evaluation was performed using a wide variety of inspection instruments such as dry film thickness gauge, pen knife, Tooke gauge, adhesion tester(s), 30x microscope and serviceability evaluation experience (minimum experience 10 years).

The instrument inspection was combined with a close visual inspection of all the interior coating's accessible areas. This was done to detect any holidays (misses), skips, runs, sags, surface containments, overspray, dry spray, poor coating cohesion, inter-coat delamination, loss of adhesion to the substrate, adverse conditions of the steel underneath the coating, or any other defects affecting the intended service.

1.2.8|Coating Lead and Chromium Content Analysis

Samples may have been taken of the various types of coatings present on the interior and exterior surfaces. Corrosion Control Consultants and Labs of Kentwood, Michigan tests these coatings in conformance with ASTM D-3335 Standard Test Methods for Concentrations of Lead and Chromium in Paint.

APPENDIX E

PAINT CHIP LEAD TEST RESULTS

ANALYTICAL LABORATORY REPORT

Tuesday, August 13, 2019

Page 1 of 2

CUSTOMER: KLM Engineering, Inc.
1976 Wooddale Drive
Woodbury, MN 55125

DATE RECEIVED: Monday, August 12, 2019
PO/PROJECT #: MN3961
SUBMITTAL #: 2019-08-12-002

LAB NUMBER: AC84807

Sampled By: Devin Severson
Job Location: Mineral Point, WI
Sample Identification: 1 - Exterior Roof

Date Sampled: August 2, 2019
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C-M (ICP-AES Method for Determination of Metals)
Date Analyzed: Monday, August 12, 2019

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Cadmium	< RL	0.00075 %
Chromium	0.0019 %	0.0013 %
Lead	0.0058 %	0.0025 %

LAB NUMBER: AC84808

Sampled By: Devin Severson
Job Location: Mineral Point, WI
Sample Identification: 2 - Interior Dry Drywell

Date Sampled: August 2, 2019
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C-M (ICP-AES Method for Determination of Metals)
Date Analyzed: Monday, August 12, 2019

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Cadmium	< RL	0.00075 %
Chromium	0.020 %	0.0013 %
Lead	0.0052 %	0.0025 %

LAB NUMBER: AC84809

Sampled By: Devin Severson
Job Location: Mineral Point, WI
Sample Identification: 3 - Interior Wet Roof

Date Sampled: August 2, 2019
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C-M (ICP-AES Method for Determination of Metals)
Date Analyzed: Monday, August 12, 2019

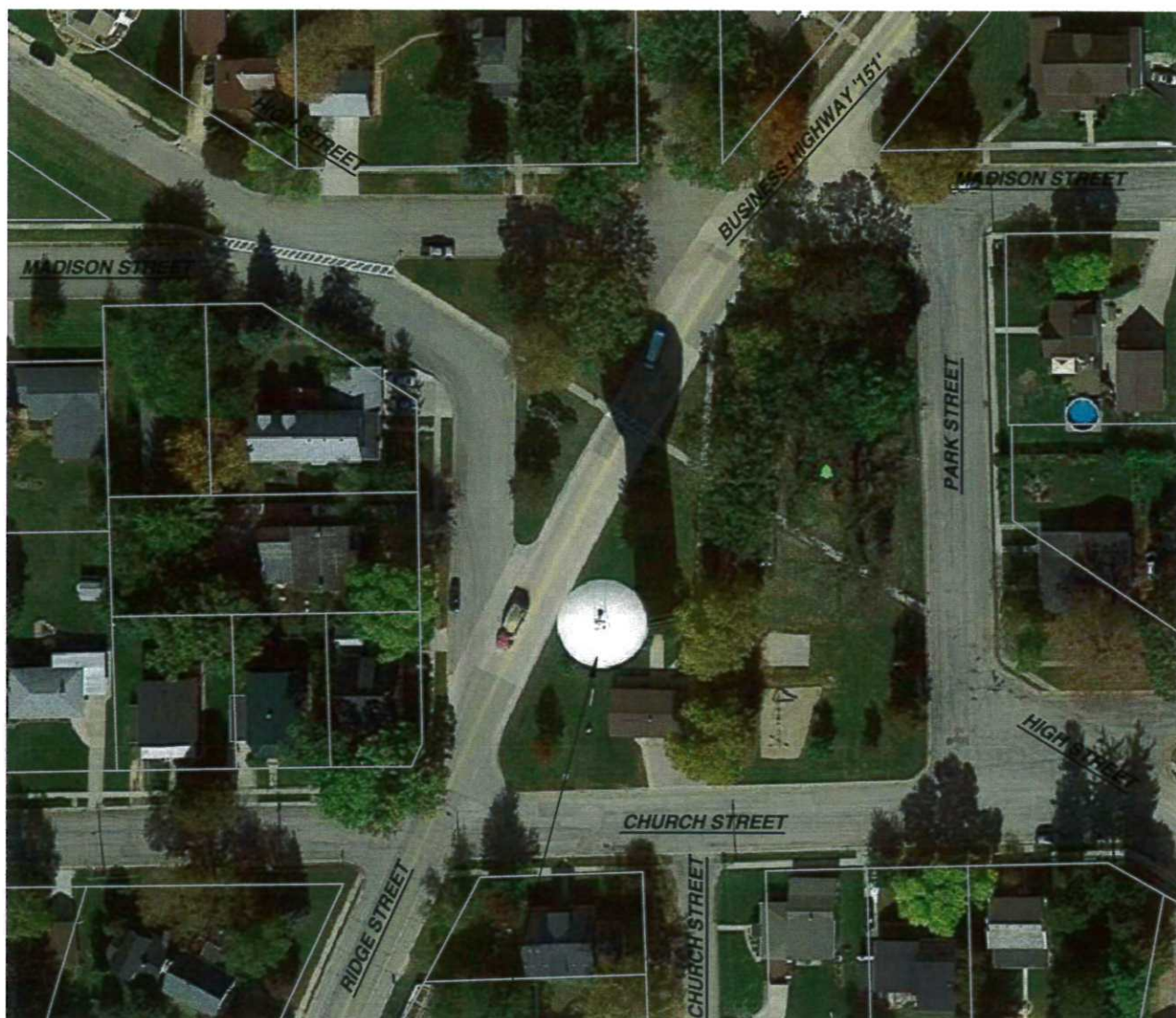
<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Cadmium	< RL	0.00075 %
Chromium	0.0022 %	0.0013 %
Lead	0.0066 %	0.0025 %

GPI Laboratories, Inc. has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by GPI Laboratories, Inc. according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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Appendix B

Site Map

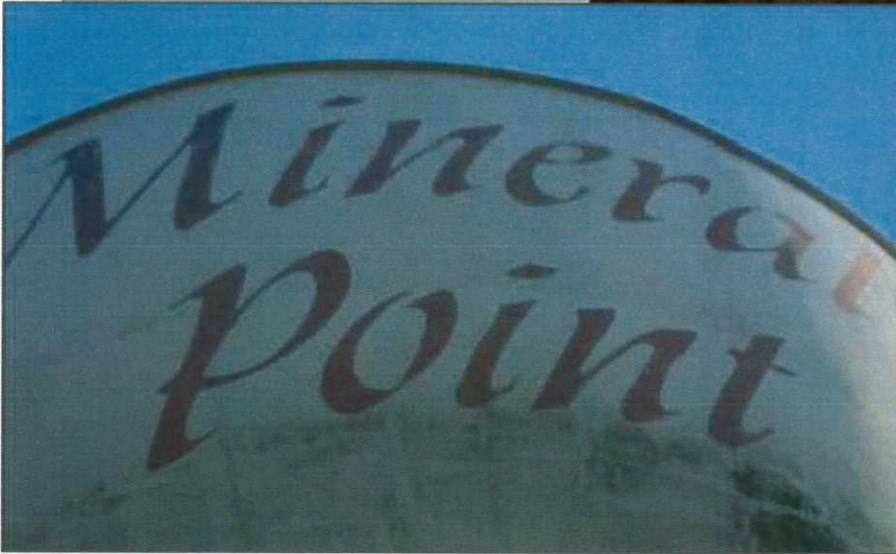


EXISTING WATER
TOWER

 <p>DELTA 3 EVERY ANGLE COVERED</p> <p>PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE GRANT WRITING • LAND DEVELOPMENT • PLANNING & CAD SERVICES</p> <p>875 SOUTH CHESTNUT STREET PHONE: (608) 348-5355 PLATEVILLE, WISCONSIN 53181</p> <p>898 JACKSON STREET PHONE: (663) 542-9005 DUBUOQUE, IOWA 52001</p> <p>G:\Projects\2019\D19-002 Mineral Point Water Tower Painting\Civil\CAD\Plan Sheets</p>	<p>Elevated Hydropillar Repainting & Repair Water Tower Park Mineral Point, Wisconsin</p>	
	<p>Project No. D19-002 Drawn By: C.Coyler Date: DEC 17, 2019 Scale: 1" = 100'</p>	<p>For Questions Regarding this Project, Please Contact: Mr. Bart P. Nies, P.E.</p>
	<p>SITE APPENDIX B</p>	

Appendix C

Water Tower Lettering



*CURRENT TEXT TYPE =
MONOTYPE LYDIAN PRO CURSIVE*

*CONTRACTOR TO PROVIDE 3 LOCATIONS FOR "MINERAL
POINT" LETTERING OF THE SAME FONT TYPE ACROSS
THE FACE OF THE TOWER AS PER OWNER.*

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	<p>Project No. D19-002</p>	<p>Drawn By: C.Coyler</p>
	<p>Date: DEC 17, 2019</p>	<p>Scale: N.T.S.</p>
	<p>For Questions Regarding this Project, Please Contact: Mr. Bart P. Nies, P.E.</p>	
		<p>TOWER LETTERING APPENDIX C</p>



Appendix D

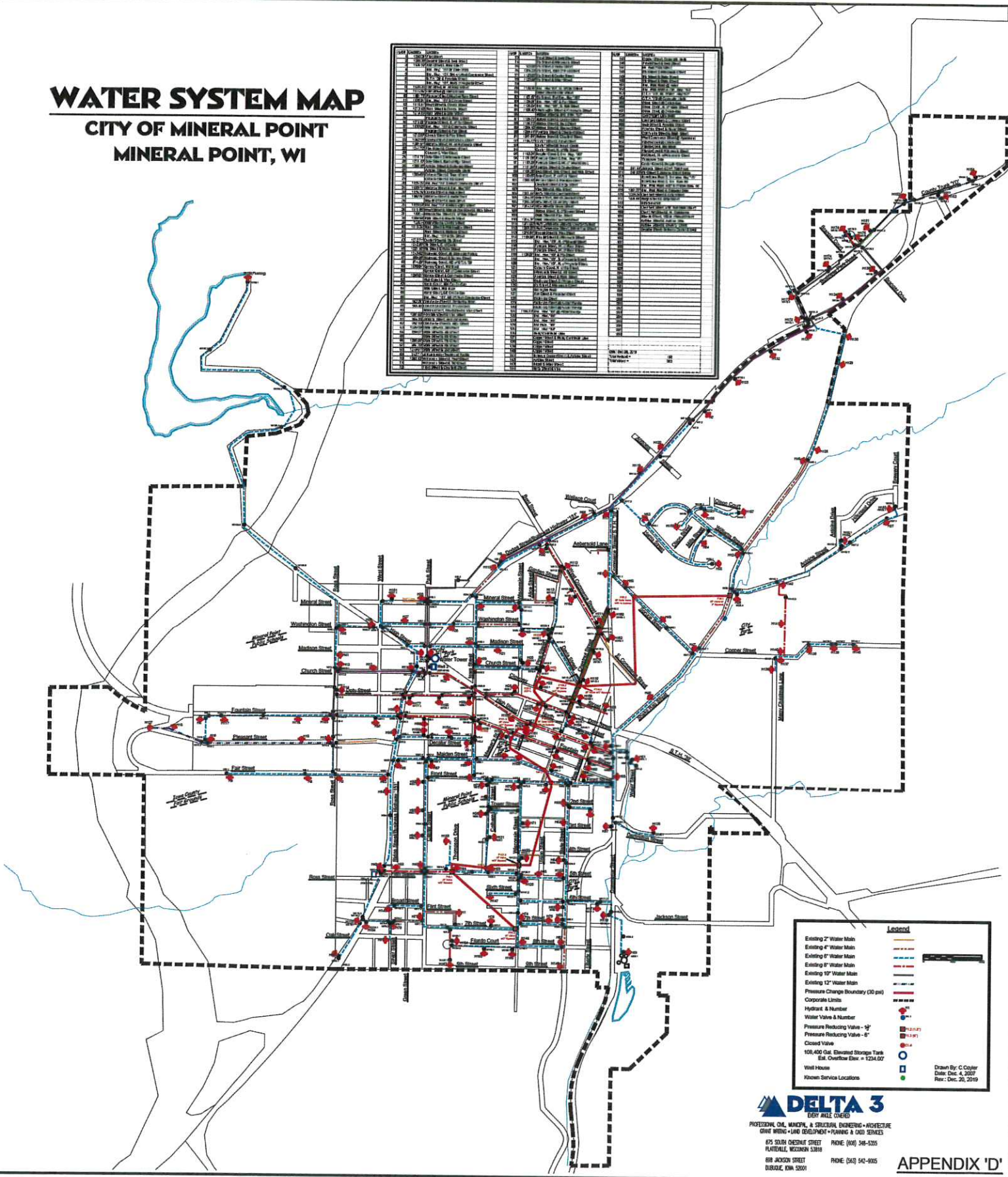
Water System Map

WATER SYSTEM MAP

CITY OF MINERAL POINT

MINERAL POINT, WI

Line Number	Line Name	Line Size	Line Material	Line Status	Line Notes
101	1st Street	12"	Cast Iron	Existing	
102	2nd Street	12"	Cast Iron	Existing	
103	3rd Street	12"	Cast Iron	Existing	
104	4th Street	12"	Cast Iron	Existing	
105	5th Street	12"	Cast Iron	Existing	
106	6th Street	12"	Cast Iron	Existing	
107	7th Street	12"	Cast Iron	Existing	
108	8th Street	12"	Cast Iron	Existing	
109	9th Street	12"	Cast Iron	Existing	
110	10th Street	12"	Cast Iron	Existing	
111	11th Street	12"	Cast Iron	Existing	
112	12th Street	12"	Cast Iron	Existing	
113	13th Street	12"	Cast Iron	Existing	
114	14th Street	12"	Cast Iron	Existing	
115	15th Street	12"	Cast Iron	Existing	
116	16th Street	12"	Cast Iron	Existing	
117	17th Street	12"	Cast Iron	Existing	
118	18th Street	12"	Cast Iron	Existing	
119	19th Street	12"	Cast Iron	Existing	
120	20th Street	12"	Cast Iron	Existing	
121	21st Street	12"	Cast Iron	Existing	
122	22nd Street	12"	Cast Iron	Existing	
123	23rd Street	12"	Cast Iron	Existing	
124	24th Street	12"	Cast Iron	Existing	
125	25th Street	12"	Cast Iron	Existing	
126	26th Street	12"	Cast Iron	Existing	
127	27th Street	12"	Cast Iron	Existing	
128	28th Street	12"	Cast Iron	Existing	
129	29th Street	12"	Cast Iron	Existing	
130	30th Street	12"	Cast Iron	Existing	
131	31st Street	12"	Cast Iron	Existing	
132	32nd Street	12"	Cast Iron	Existing	
133	33rd Street	12"	Cast Iron	Existing	
134	34th Street	12"	Cast Iron	Existing	
135	35th Street	12"	Cast Iron	Existing	
136	36th Street	12"	Cast Iron	Existing	
137	37th Street	12"	Cast Iron	Existing	
138	38th Street	12"	Cast Iron	Existing	
139	39th Street	12"	Cast Iron	Existing	
140	40th Street	12"	Cast Iron	Existing	
141	41st Street	12"	Cast Iron	Existing	
142	42nd Street	12"	Cast Iron	Existing	
143	43rd Street	12"	Cast Iron	Existing	
144	44th Street	12"	Cast Iron	Existing	
145	45th Street	12"	Cast Iron	Existing	
146	46th Street	12"	Cast Iron	Existing	
147	47th Street	12"	Cast Iron	Existing	
148	48th Street	12"	Cast Iron	Existing	
149	49th Street	12"	Cast Iron	Existing	
150	50th Street	12"	Cast Iron	Existing	
151	51st Street	12"	Cast Iron	Existing	
152	52nd Street	12"	Cast Iron	Existing	
153	53rd Street	12"	Cast Iron	Existing	
154	54th Street	12"	Cast Iron	Existing	
155	55th Street	12"	Cast Iron	Existing	
156	56th Street	12"	Cast Iron	Existing	
157	57th Street	12"	Cast Iron	Existing	
158	58th Street	12"	Cast Iron	Existing	
159	59th Street	12"	Cast Iron	Existing	
160	60th Street	12"	Cast Iron	Existing	
161	61st Street	12"	Cast Iron	Existing	
162	62nd Street	12"	Cast Iron	Existing	
163	63rd Street	12"	Cast Iron	Existing	
164	64th Street	12"	Cast Iron	Existing	
165	65th Street	12"	Cast Iron	Existing	
166	66th Street	12"	Cast Iron	Existing	
167	67th Street	12"	Cast Iron	Existing	
168	68th Street	12"	Cast Iron	Existing	
169	69th Street	12"	Cast Iron	Existing	
170	70th Street	12"	Cast Iron	Existing	
171	71st Street	12"	Cast Iron	Existing	
172	72nd Street	12"	Cast Iron	Existing	
173	73rd Street	12"	Cast Iron	Existing	
174	74th Street	12"	Cast Iron	Existing	
175	75th Street	12"	Cast Iron	Existing	
176	76th Street	12"	Cast Iron	Existing	
177	77th Street	12"	Cast Iron	Existing	
178	78th Street	12"	Cast Iron	Existing	
179	79th Street	12"	Cast Iron	Existing	
180	80th Street	12"	Cast Iron	Existing	
181	81st Street	12"	Cast Iron	Existing	
182	82nd Street	12"	Cast Iron	Existing	
183	83rd Street	12"	Cast Iron	Existing	
184	84th Street	12"	Cast Iron	Existing	
185	85th Street	12"	Cast Iron	Existing	
186	86th Street	12"	Cast Iron	Existing	
187	87th Street	12"	Cast Iron	Existing	
188	88th Street	12"	Cast Iron	Existing	
189	89th Street	12"	Cast Iron	Existing	
190	90th Street	12"	Cast Iron	Existing	
191	91st Street	12"	Cast Iron	Existing	
192	92nd Street	12"	Cast Iron	Existing	
193	93rd Street	12"	Cast Iron	Existing	
194	94th Street	12"	Cast Iron	Existing	
195	95th Street	12"	Cast Iron	Existing	
196	96th Street	12"	Cast Iron	Existing	
197	97th Street	12"	Cast Iron	Existing	
198	98th Street	12"	Cast Iron	Existing	
199	99th Street	12"	Cast Iron	Existing	
200	100th Street	12"	Cast Iron	Existing	



Legend

- Existing 2" Water Main
- Existing 4" Water Main
- Existing 6" Water Main
- Existing 8" Water Main
- Existing 10" Water Main
- Existing 12" Water Main
- Pressure Change Boundary (30 psi)
- Corporate Limits
- Hydrant & Number
- Water Valve & Number
- Pressure Reducing Valve - 1/2"
- Pressure Reducing Valve - 6"
- Closed Valve
- 100,000 Gal. Elevated Storage Tank
- Well House
- Known Service Locations

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 PLATEVILLE, WISCONSIN 53188
 888 JACKSON STREET PHONE: (541) 542-8015
 DUNDAS, KAN. 66201

APPENDIX 'D'

Drawn By: C. Coyle
 Date: Dec. 4, 2007
 Rev: Dec. 20, 2018

