

**CITY OF OTSEGO, MINNESOTA
KLM PROJECT MN 3408**

**PLANS AND SPECIFICATIONS FOR CLEANING,
REPAIRING & PAINTING**

**400,000 GALLON ELEVATED
WATER TOWER NUMBER ONE**



**MARCH 2016
CITY PROJECT No. 4201701**



PROJECT TITLE PAGE

Project:

Name: Cleaning, Repairing and Painting 400,000 Gallon Elevated Water Tower
Location: 15977 70th Street NE, Otsego, Minnesota 55330
Project No. KLM Project MN 3408

Owner:

Name: City of Otsego, Minnesota
Address: 13400 90th Street NE
Otsego, MN 55330
Telephone: 763-428-9215

Primary Owner Contact:

Name: Kurt Neidermeier, Utility Manager
Telephone: 763-497-3062
Mobile: 763-458-4219
Email: KNeidermeier@ci.otsego.mn.us

Engineer:

Name: KLM Engineering, Inc.
Address: PO Box 897
3394 Lake Elmo Avenue N.
Lake Elmo, MN 55042
Telephone: (651) 773-5111
Fax: (651) 773-5222

Project Engineer:

Name: Chris Otterness, PE
Houston Engineering
6901 Fish Lake Road
Suite 140
Maple Grove, MN 55369
Phone: (763) 493-6665
Email: cotterness@houstoneng.com

Project Supervisor:

Name: Scott Kriese
Mobile: (651) 755-8664
Email: skriese@klmengineering.com

Project Manager:

Name: Rodney Ellis
Phone/mobile: (612) 810-0956
Email: rellis@klmengineering.com

PROJECT TITLE PAGE

Prime Contractor:

Sub-Contractor:

Name: _____

Name: _____

Address: _____

Address: _____

Phone: _____

Phone: _____

Fax: _____

Fax: _____

Primary Contact

Specialty: _____

Name: _____

Primary Contact

Mobile: _____

Name: _____

Email: _____

Mobile: _____

Foreman/Superintendent

Email: _____

Name: _____

Foreman/Superintendent

Mobile: _____

Name: _____

Email: _____

Mobile: _____

Email: _____

PROJECT TITLE PAGE

Sub-Contractor:

Name: _____

Address: _____

Phone: _____

Fax: _____

Specialty: _____

Primary Contact

Name: _____

Mobile: _____

Email: _____

Foreman/Superintendent

Name: _____

Mobile: _____

Email: _____

Sub-Contractor:

Name: _____

Address: _____

Phone: _____

Fax: _____

Specialty: _____

Primary Contact

Name: _____

Mobile: _____

Email: _____

Foreman/Superintendent

Name: _____

Mobile: _____

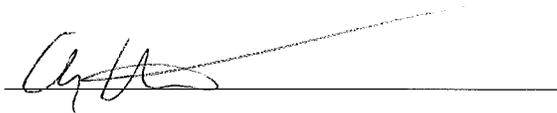
Email: _____

400,000-GALLON WATER STORAGE TANK REHABILITATION
ELEVATED WATER TOWER NUMBER 1
KLM PROJECT NO. MN 3408
OTSEGO, MINNESOTA
May, 2016

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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Chris Otterness, P.E.

Registration No. 41961 Dated: 4-25-16

**Advertisement For Bids
Otsego, Minnesota
Cleaning, Repairing And Painting
400,000 Gallon Watertower
Tower Number 1**

The City of Otsego, Minnesota, will receive sealed bids for the furnishing of all tools, labor, materials and equipment necessary for elevated water tower rehabilitation until 2:00 PM CST, June 14, 2016 at City Hall, 13400 90th Street NE, Otsego, Minnesota, 55330 at which time and place all bids will be publicly opened and read aloud.

The Plans and Specifications, Instructions to Bidders, Proposal Forms, Project Requirements, Performance and Payment Bonds and other Contract Documents may be examined at the following:

Office of the City Clerk
City of Otsego
13400 90th Street
Otsego, Minnesota 55330
Attn. Tami Loff

Office of KLM Engineering, Inc.
P. O. Box 897
3394 Lake Elmo Avenue North
Lake Elmo, Minnesota 55042
Attn. Scott Kriese

Copies of the Plans and Specifications and Bid Documents may be obtained from **KLM Engineering, Inc.**, P. O. Box 897, 3394 Lake Elmo Avenue North, Lake Elmo, Minnesota 55042, phone 651-773-5111, FAX 651-773-5222, upon payment of \$85.00 for each set. No refund will be made. Requests for overnight delivery of specification packages will not be honored unless labels with requester account numbers are included with written request. Bid sets may also be downloaded from QuestCDN.com, project #4391313 for a fee of \$20.00, or viewed on the City website (www.ci.otsego.mn.us).

The work on this project shall consist of the following major items: Miscellaneous structural repairs, complete interior and exterior paint removal and replacement, containment, abatement and disposal.

The work on this project is required to be started within 10 days of receipt of Notice to Proceed, on or before May 1, 2017 (flexible start date) and all work shall be completed by July 3, 2017 (63 calendar days).

A mandatory pre-bid conference will be held at the Lilly Pond conference room, Otsego City Hall, 13400 90th St., Otsego, MN followed by a visit to the project site, on June 7, 2016 at 10:00 AM, at which time the Owner's Representatives, Bidders and subcontractors invited will discuss the project. **Attendance by prospective Bidders or their designated representatives at the pre-bid conference is a pre-requisite to bidding the project.**

No bid will be considered unless sealed, filed with the City Clerk, accompanied by cash deposit, certified check, bid bond or cashiers check, payable to the City of Otsego, Minnesota in the sum of at least five (5) percent of the amount of the bid, such deposit or check or Bidder's Bond to be forfeited to the City in the event that the successful bidder fails to enter into a contract awarded to him in accordance with the terms of his bid, or fails to furnish bond as provided by law, within ten (10) days after the award becomes final. Bids shall be marked as to indicate: Name of Bidder; Proposal for: "Cleaning, Repairing and Painting 400,000 Gallon Water tower, KLM Project MN 3408, Water Tower Number 1" to be opened on June 14, 2016 at 2:00 PM.

Enclosed in a separate envelope and attached to the Bid, shall be the Affidavit of Attendance at the mandatory pre-bid and the Bid Security.

The City of Otsego reserves the right to hold all bids for a period of forty-five (45) days after the date set for the bid opening thereof and to reject any bid, or bids or all bids and to waive any irregularities. The City further reserves the right to award the contract in the best interest of the City. No bidder may withdraw his bid within forty-five (45) days of the date set for the opening of bids.

Lori Johnson
City Administrator
13400 90th Street
Otsego, Minnesota MN 55330
May, 2016

On Line Quest CDN: May 24, 2016
City Website: May 24, 2016
Minneapolis Builders Exchange: May 24, 2016

INSTRUCTIONS TO BIDDERS
KLM PROJECT MN 3408
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1.0 PRE-BID CONFERENCE

1.1 A mandatory pre-bid conference will be held on June 7, 2016 at 10:00 am at the Lilly Pond conference room within Otsego City Hall, which is located at 13400 90th Street, Otsego, MN 55330, followed by a visit to the project site, at which time the City of Otsego Representatives, Bidders and sub-contractors invited will discuss the project. The City of Otsego will invite questions for formal clarification, of which, if determined by the Engineer necessary, will be confirmed by Addendum. Bidders shall also make a thorough examination of conditions, take all necessary measurements and familiarize themselves with all existing conditions and all limitations pertaining to the work herein contemplated. The bidders must satisfy themselves regarding the character, quantities and conditions of the various materials and the work to be performed.

1.2 Attendance by prospective Bidders or their designated representatives at the pre-bid conference is a pre-requisite to bidding this project.

1.3 BIDS RECEIVED WITHOUT THE AFFIDAVIT OF ATTENDANCE AT THE PRE-BID CONFERENCE AND THE BID GUARANTEE ATTACHED TO THE SEALED BID IN A SEPARATE ENVELOPE WILL BE RETURNED UNOPENED.

2.0 BIDDERS' INSPECTION

2.1 All bidders are advised and invited to inspect the tank prior to submitting a bid to become familiar with the conditions of the existing tank; the proximity of other buildings and the space available at the site for storage of materials. Bidders shall make arrangements to view the tank by calling Kurt Neidermeier, Utility Manager at (763) 458-4219

2.2 All information given on the drawings or in the contract documents relating to the work and surface conditions and other structures is from the best sources at present available to the City of Otsego. All such information is furnished only for the information and convenience of the bidders.

2.3 It is agreed that the City of Otsego does not warrant or guarantee that the existing conditions or other structures encountered during the rehabilitation will be the same as those indicated on the drawings or in the Contract Documents. The bidders must satisfy themselves regarding the character, quantities and conditions of the various materials and the work to be performed.

2.4 It is further agreed and understood that the bidder will not use any information made available to him or obtained in any examination made by him in any manner as a basis or grounds of claim or demand of any nature against the City of Otsego or the Engineer arising from or by reason of any variance which may exist between the information offered and the actual conditions, materials, or structures encountered during the Work, except as may otherwise be provided for in the Contract Documents.

3.0 COPIES OF PLANS AND SPECIFICATIONS

3.1 Copies of the plans and specifications and bid documents for use in preparing bids may be obtained from KLM Engineering, Inc., P. O. Box 897, 3394 Lake Elmo Avenue North, Lake Elmo, Minnesota 55042 for \$85.00 per set. No refund will be made. Requests for plans and specification packages and bid documents should be submitted in writing. Requests for overnight delivery of specifications will not be honored unless labels with requested account numbers are included with the request.

3.2 The bidder(s), to whom a contract is awarded, will be furnished without cost three (3) copies of the specification package, including all pertinent addenda.

4.0 OWNER

4.1 The City of Otsego, Minnesota is designated as Owner and is hereinafter referred to as the Owner. The contractor(s) shall coordinate all work with Kurt Neidermeier, the City of Otsego Utility Manager, or Scott Kriese of KLM Engineering, the Project Supervisor.

5.0 BIDDER QUALIFICATIONS

5.1 Bidders are required to submit evidence that they have practical knowledge of the particular work bid upon and that they have the financial resources to complete the proposed work. Failure on the part of any bidder to carry out previous contracts satisfactorily, or his lack of experience or equipment necessary for the satisfactory and timely completion of these projects, may be deemed sufficient cause for disqualification of said bidder. **Bidders who will require more than fifty percent (50%) of the work to be performed by subcontractors will be deemed unqualified to perform the work.**

5.2 The bidder must readily and independently document that the bidder possesses the experience, equipment and financial resources for a timely and professional completion of these projects. The bidder shall submit on the forms provided in the Bid Form Section the following information to the City of Otsego for considerations:

- A. The address and description of the bidders place of business.
- B. Years in business.
- C. A list of the equipment owned by the bidder that will be utilized in completing the work.
- D. A financial statement of the bidder, prepared in accordance with Standards established by the American Institute of Certified Public Accountants.
- E. Bank references, name, address and telephone.
- F. Bonding reference, name, address, and telephone.
- G. The bidders performance record over the past four years or the description and location of a minimum of five (5) equivalent, equal size or greater projects constructed in a satisfactory manner by the bidder. This list of references shall

- include complete interior and exterior coating work performed on **400,000 gallon, minimum size**, potable water elevated storage tanks.
- H. The technical experience of the personnel guaranteed to be employed in responsible charge of the work.
 - I. A list of the three most recent projects of similar work performed under the direction of a Professional Engineer or Registered Architect. The list should include the name of the firm, the address, telephone number and name of the project contact.
 - J. A list of three material suppliers, name, address and telephone.
 - K. A list of the subcontractor(s) the bidder intends to employ on the project.
 - L. Such additional information as will assist the Owner and Engineer in determining whether the bidder is adequately prepared to fulfill the Contract(s).

5.3 The object of the request for the bidders qualifications is to make it possible for the Owner to have exact information of the financial ability, equipment owned, and experience of the bidder in order to reduce the hazards involved in awarding contracts to parties apparently not qualified to perform them, and to select only those bidders qualified to properly complete the work.

5.4 The Owner reserves the right to reject any Bid where an investigation of the available evidence or information does not satisfy the Owner that the bidder is qualified to carry out the terms of the Contract. The Owner's decision as to qualifications of the bidder shall be final.

6.0 BID SUBMITTALS

6.1 Bids will be accepted until 2:00 PM on June 14, 2016. All bids will be legibly written or printed in ink on the attached BID FORMS. All bids must state the proposed price for each item of the Work and be signed by the bidder.

6.2 No alternates in BID FORMS shall be accepted, unless accompanied by a cover letter clearly defining the alternatives the bidder proposes to employ.

6.3 Each bid shall be enclosed in a sealed envelope or wrapping addressed to Kurt Neidermeier, City of Otsego, Minnesota, and identified on the outside of the envelope with the words: **Bid for Cleaning, Repairing and Painting 400,000 Gallon Watertower, KLM Project MN 3408, Water Tower Number 1**. In order to ensure consideration, the bid shall be enclosed in a sealed envelope addressed to the City of Otsego and clearly marked as to the time and date of the bid opening.

6.4 **Each bid shall be accompanied by the appropriate bid guarantee and the affidavit of attendance at the pre-bid conference contained in a separate envelope attached to the exterior of the sealed bid.** This envelope will be opened after the bid submittal deadline and immediately prior to the opening of the bid packet to which it is attached. Each bid shall be accompanied by a money order, certified check or bid bond payable to the order of the City of Otsego in an amount not less than five percent (5%) of

the total amount of the bid, contained in a separate envelope attached to the exterior of the sealed bid. No bid will be considered unless accompanied by such deposit.

6.5 The bid guarantee shall be made without condition to **the City of Otsego, Minnesota hereinafter referred to as the Owner**. The bid guarantee may be retained by and shall be forfeited to the Owner as liquidated damages if the bid is accepted and the bidder refuses, fails or neglects to execute the contract and furnish a performance and payment bond within 10 days of the date of acceptance of this bid. The next best bid shall be then considered the successful bid, and, at the discretion of the City Council, the contract may be awarded to the bidder submitting that bid.

6.6 All attachments, certifications and addenda acknowledgment attached to the Bid shall be executed in the same manner as the Bid. No required submittals for Bid, or clarification of information submitted or missing shall be allowed after the specified time and date of submittal unless such irregularities or informalities are waived in writing by the Owner.

6.7 In case alternate bids are called for, providing for the use of several different classes of materials or types of improvement for the same work, one deposit in the amount of five percent (5%) of the total amount of the highest bid will be sufficient for all bids.

6.8 As soon as a contract is awarded, all deposits shall be returned to the bidders, except that of the three lowest bidders, which shall be retained until the contract has been signed and the bonds of the Contractor have been filed, approved, and accepted which shall be within ten (10) days of notice of award of the contract.

6.9 Each bid must contain the full name or names and post office address of the bidder or bidders, and any person signing any bid as agent of another, or of a firm, must furnish legal evidence of authority to do so. The legal status of the bidder must be stated in the bid. A corporation bidder must name the state in which its articles of incorporation are held. A partnership must give the full names and addresses of all partners.

6.10 When a firm submits a bid, the individual names of all its members shall be written out and shall be signed in full; but the signers may, if they choose describe themselves in addition, as doing business under a firm name and style.

6.11 In case a corporation submits a bid, the bid must be signed in the name of, and under the seal of, the corporation by a duly authorized officer or agent of the corporation. The corporate address must also be included. Such officer or agent must present legal evidence stating their lawful authority to sign said bid. In the event that any corporation organized and doing business under the laws of a foreign state is the successful bidder, such corporation shall present evidence that it is authorized to do business in the State of Minnesota before the contract is executed. After bidders have submitted bids, they shall not withdraw or cancel such bid and all sums deposited with such bid may be held by the City until all bids submitted have been canvassed, a contract awarded and executed, and the required bonds and insurance furnished and approved.

6.12 The acceptance of the bid will be a notice in writing signed by a duly authorized representative of the City of Otsego. The acceptance of the bid shall bind the successful bidder to execute the Contract within ten (10) days and to be responsible for liquidated damages as provided for execution of Contract and damages for failure to execute. The rights and obligations provided for in the Contract shall become effective upon the parties only with its formal execution by the City of Otsego.

6.13 The City reserves the right to reject any or all bids or to accept the bid deemed in the best interest of the City. Without limiting the generality of the foregoing, any bid which is incomplete, obscure, or irregular may be rejected; any bid having erasures or corrections in the price sheets, which have not been initialed by the contracting officer executing the bid, may be rejected; any bid which omits a bid on any one or more items in the price sheet may be rejected; any bid in which unit prices are obviously unbalanced may be rejected; any bid accompanied by an insufficient or irregular bid bond may be rejected.

6.14 More than one bid from an individual, firm, partnership or corporation under the same or different names will not be considered. Evidence that any bidder is interested in more than one bid for the same work will cause rejection of all such bids. Collusion between the bidders will be considered sufficient cause for the rejection of all bids so affected.

6.15 Failure on the part of any bidder to carry out previous contracts satisfactorily or bidder's lack of experience or equipment necessary for the satisfactory completion of the project may be deemed sufficient cause for disqualification.

6.16 Unless otherwise specifically provided in the specifications for the improvement, bids must be made upon each and every item on the blank Bid Form.

6.17 Telegraphic bids will not be considered. Modifications to bids already submitted will be allowed if received prior to the time specified in the Advertisement for Bids. Modifications shall be submitted as such, and shall not reveal the total amount of either the original or revised bids.

6.18 Whenever alternate bids are called for, specifying the use of several different classes of material or types of improvement for the same work, all bidders are requested to submit prices for use of each of the several classes of material or types of improvement as specified. The material to be used or the type of improvement to be adopted will be selected by the City after the bids have been opened and read.

7.0 CONSIDERATION OF BIDS

7.1 The Owner may consider as non-responsive any Bid not prepared and submitted in accordance with the provisions herein. The Owner reserves the right to accept the Bid which, in its judgment, is the lowest responsive Bid submitted by a qualified bidder; to reject any or all Bids; and to waive irregularities or informalities in any Bid that do not result in a competitive advantage to the bidder. Bids received after the specified date and time of closing will be returned.

7.2 All properly identified bids received on time will be opened publicly and will be read aloud. An abstract of the bids will be made available to all bidders. Bids received after the specified date and time of closing will be returned. The Owner may consider as non-responsive any Bid not prepared and submitted in accordance with the provisions herein.

7.3 The Owner shall have the right to reject any and all bids, reject a bid not accompanied by the required check or security, reject a bid which is in any way incomplete or irregular, and to waive informalities.

7.4 The Owner will award the contract to the lowest responsible bidder, which will be based on factors pertinent to the matter which may include the following:

1. The bidder's adherence to all conditions and requirements of the bid specifications.
2. The total bid price.
3. The bidder's general reputation and experience.
4. Evaluation of the bidder's ability to service the Owner.
5. Prior knowledge of and experience with the bidder.
6. The needs and requirements of the Owner.
7. The bidder's ability to meet delivery requirements.
8. All maintenance costs and warranty provisions.

7.5 Unless otherwise stated in the specifications, the Owner reserves the right to award the contract in whole or in part, whichever is in the best interests of the Owner. All tied bids shall be resolved in a manner which is in the best interests of the Owner. The Owner reserves the right to waive informalities in the bid and to award to the bidder the Owner determines is in the Owner's best interest.

8.0 TIME OF COMPLETION

8.1 The time of completion is an essential part of the contract and it will be necessary for each bidder to satisfy the Owner as to their ability to complete the project within the allowable time as set forth in the Bid. In this connection, attention is directed to the Project Schedule in Project Requirements section.

9.0 STATE LEGAL REQUIREMENTS

9.1 Prior to contract award, non-resident corporations must furnish evidence showing that all legal requirements for transacting business in Minnesota have been fulfilled. The state under which a non-resident corporation is incorporated must be named.

10.0 OUT-OF-STATE CONTRACTOR SURETY DEPOSIT

10.1 When an out-of-state contractor enters into a contract that exceeds \$100,000.00, the contractor must file Form SD-E, Exemption from Surety Deposits for out-of-state contractors, with the Minnesota Department of Revenue.

If the contractor is exempt from the surety deposit requirements, he shall provide the Owner a copy of the form showing the Revenue Department certification. If the contractor is not exempt, the Owner will withhold an additional eight (8) percent of each payment made to the contractor and forward those funds to the Minnesota Department of Revenue. Forms and information can be obtained by calling (651) 296-6181 or toll free at 1-800-657-3777.

11.0 COMPLIANCE WITH MINNESOTA STATUTES 290.92, 290.9705 AND 471.425

11.1 Upon completion of the project and prior to final payment, the contractor and all sub-contractors shall complete Minnesota Department of Revenue Form IC-134. This form, Withholding Affidavit for Contractors, must be stamped and dated by the Department of Revenue and forwarded to the Engineer. Contractors can obtain copies of this form from the Minnesota Department of Revenue, Mail Station 4450, St. Paul, Minnesota 55146 or by calling (651) 296-6181.

11.2 The Owner requires that the contractor(s) and sub-contractors provide documentation of compliance with Minnesota Statute 471.425, regarding prompt payment of sub-contractors.

12.0 TAXES AND PERMITS

12.1 The contractors' attention is directed to the General Conditions, regarding payment of taxes and obtaining permits.

13.0 PERFORMANCE AND PAYMENT BONDS

13.1 The successful bidder, before being awarded the contract, shall be required to furnish separate Performance and Payment Bonds in the full amount of the contract to insure faithful performance of the Work. The Owner may request, from the bidder(s) who are under consideration for contract award, written confirmation from the home office of the Surety who is to furnish the Performance and Payment Bonds that said bidder(s) have been investigated by the Surety and that, based on this investigation, the Surety will, in fact issue such bonds. The Surety company on each bond shall be duly authorized to do business in the State of Minnesota and shall be satisfactory to the Owner.

13.2 The Performance and Payment Bonds shall be executed on the forms included in the Contract Documents by a Surety company authorized to do business in the State of Minnesota and acceptable to the Owner. Accompanying the Performance and Payment Bonds shall be a "Power of Attorney" authorizing the attorney-in-fact to bind the Surety company and certified to include the date of the Performance and Payment Bonds.

13.3 The Performance Bond shall be in effect beginning with its execution within 30 days of award, through the duration of the two (2) year guarantee period following the project close-out date.

14.0 INSURANCE REQUIREMENTS

14.1 Throughout the life of the contract, the Contractor(s) will be required to carry the types and amounts of insurance and furnish a certificate from an insurance company as set forth in the General Conditions.

15.0 PAYMENTS

15.1 Payments will be made by cash or check. Partial payments of 95 % of the work performed will be made on monthly estimates of the contractor's completed work. Estimates for payment will be submitted by the contractor, approved by the Engineer and prepared by the Engineer for submittal to the City of Otsego, Minnesota for payment.

16.0 INTERPRETATION OF PLANS, SPECIFICATIONS AND ADDENDA

16.1 Oral answers will not be given to prospective bidders in reply to questions involving the interpretation of the intent or meaning of any part of the drawings, plans or specifications or other Contract Documents, or the equality or use of products or methods other than those designated or described on drawings, plans or specifications. To receive consideration, such questions shall be submitted in writing to the Engineer at least seven (7) business days before the established date for receipt of Bids. Such written questions shall be addressed to KLM Engineering, Inc., P. O. Box 897, 3394 Lake Elmo Avenue North, Lake Elmo, MN 55042, attention Mr. Scott Kriese, Project Supervisor or Chris Otterness, Project Engineer.

16.2 The Engineer will arrange as Addenda, which shall become part of the contract, any and all interpretations and any supplemental instructions deemed necessary by the Engineer or Owner. At least two (2) days prior to the date set forth for receipt of Bids, the Engineer will send copies of the addenda to each Plan holder.

16.3 No substitutions will be considered prior to receipt of the bids unless written request for approval has been received by the Engineer at least seven (7) days prior to the time of receipt of the bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. The Owner's decision of approval or disapproval of a

proposed substitution shall be final. If approval of a substitution is made prior to receipt of bids, such approval will be set forth in an addendum. Addenda will be mailed to all who are known by the City of Otsego to have received a complete set of the bidding documents.

16.4 The Owner reserves the right to issue addenda for the specific purpose of postponing the date for receipt of Bids. The bidders shall acknowledge receipt of all addenda in the Bid Forms.

17.0 ESTIMATE OF QUANTITIES

17.1 The schedule of quantities, although stated with as much accuracy as is possible in advance, is approximate only and is assumed solely for the purpose of comparing bids. The quantities on which payments will be made to the Contractor are to be determined by measurements of the work actually performed by the Contractor as specified in said contract.

17.2 The Owner reserves the right to increase or decrease, within reasonable limits, any of the quantities shown. The term "reasonable limits" shall mean a twenty (20) percent increase or decrease in the quantities on any one contract item. In the event the actual quantities differ more than the reasonable limits an equitable revision of the unit price shall be made when requested by either the City or the Contractor. This twenty (20) per cent limit does not apply to items specifically excluded or listed as optional by the City, nor to minor contract items.

18.0 EXAMINATION OF BIDS

18.1 All bids submitted shall be subject to the requirements of the Minnesota Government Data Practices Act.

18.2 All bids will be placed in the custody of the City Clerk until the Contract for the project has been awarded by the City Council. The City Clerk will check all bids submitted to verify the total bid on each bid and will certify that all bids have been checked and corrected (where errors in extension have been made). The certification will be presented to the City Council when award of Contract is considered.

19.0 RESPONSIBLE CONTRACTOR

19.1 The City cannot award a construction contract in excess of \$50,000 unless the Bidder is a "responsible contractor" as defined in Minnesota Statutes §16C.285, subdivision 3. A Bidder submitting a Bid for this Project must verify that it meets the minimum criteria specified in that statute by submitting the Responsible Contractor Verification and Certification of Compliance form. A company owner or officer must sign the Responsible Contractor Verification and Certification of Compliance form under oath verifying compliance with each of the minimum criteria. Bidders must obtain verifications of compliance from all subcontractors. A Bidder must submit signed copies

of verifications and certifications of compliance from subcontractors upon the City's request.

19.2 A Bidder or subcontractor who does not meet the minimum criteria established in Minnesota Statutes §16C.285, subdivision 3, or who fails to verify compliance with the criteria, will not be a "responsible contractor" and will be ineligible to be awarded the Contract for this Project or to work on this Project. Making a false statement verifying compliance with any of the minimum criteria will render the Bidder or subcontractor ineligible to be awarded a construction contract for this Project and may result in the termination of a contract awarded to a Bidder or subcontractor that makes a false statement.

19.3 A Bidder must also identify each subcontractor it intends to use on the Project. A Bidder must complete Attachment A-1 and submit it with the Responsible Contractor Verification and Certification of Compliance form, identifying each subcontractor it intends to use as of the time of bid submission. Include the State Project number specific to the bid on each form. **THE COMPLETED FORMS MUST BE SUBMITTED WITH THE BID.**

19.4 If the Bidder retains additional subcontractors after submitting its Responsible Contractor Verification and Certification of Compliance form, then the Bidder must submit Attachment A-2 within 14 days of retaining the additional subcontractor. Documents must be submitted to the Project Engineer.

20.0 SUBLETTING OF CONTRACT

20.1 For Projects in excess of \$50,000, the Contractor may sublet work only to subcontractors that meet the definition of "responsible contractor" in Minnesota Statutes §16C.285, subdivision 3. The Contractor is responsible for obtaining verifications of compliance with §16C.285 from subcontractors using the form provided. The Contractor must provide such verifications to the City upon the City's request.

21.0 AFFIDAVIT OF ATTENDANCE

21.1 Affidavit of attendance at mandatory pre-bid conference. Attendance at the pre-bid conference is a pre-requisite to bidding this project, KLM Engineering Project MN3408 – 400,000 Gallon, Single Pedestal, Elevated Water Storage Tank Rehabilitation, Tower Number 1, owned by the City of Otsego, Minnesota.

The signed affidavit must be enclosed with the bid.

Bids received without the bid Guarantee and Affidavit of Attendance at the Pre-Bid Conference attached to the Sealed Bid in a separate envelope will be returned unopened.

Contractor
(Please Print)

Contractor's Representative
(Please Print)

Signature

Date

Owner's Representative
(Please Print)

Signature

Date

BID FORMS

KLM Project MN 3408

Bid Submitted by:

Name of Bidder

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ATTACHMENT A: RESPONSIBLE CONTRACTOR VERIFICATION FORM

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**1.0 SCHEDULE NO. 1
CLEANING, REPAIRING AND PAINTING
400,000 GALLON ELEVATED WATER STORAGE TANK
TOWER NUMBER 1
KLM PROJECT MN 3408
OTSEGO, MINNESOTA**

Opening Time: 2:00 PM, CST

Opening Date: June 14, 2016

Honorable City Council
City of Otsego
13400 90th Street, NE
Otsego, Minnesota 55330

City Council Members:

The undersigned, _____ (contractor) being familiar with your local conditions, having made the field inspections and investigations deemed necessary, having studied the plans and specifications for the work including Addenda Nos. _____ and being familiar with all factors and other conditions affecting the work and cost thereof, hereby propose to furnish all labor, tools, materials, equipment and all else necessary to completely construct the project in accordance with the plans and specifications on file with you and KLM Engineering, Inc., P. O. Box 897, 3394 Lake Elmo Avenue North, Lake Elmo, MN 55042, as follows:

We understand that the City Council, City of Otsego, Minnesota may accept or reject any or all Bids and waive any irregularity that does not result in a competitive advantage to the bidder.

The final amount of the contract shall be determined by multiplying the final measured quantities of the various items actually constructed and installed by the unit prices therefore, in the manner prescribed in the specifications. However, the low bidder shall be determined by adding the sums resulting from multiplying the quantities stated by the unit prices bid therefore.

Item	Description	Units	Quantity	Unit Cost	Cost
1	Structural Modifications	Lump Sum	1		
2	Surface Repairs	Man Hours	25		
3	Full Interior Wet Recoating	Lump Sum	1		
4	Interior Dry Spot Repair	Square Feet	1200		
5	Exterior Abrasive Blast and Recoating	Lump Sum	1		
6	Mobilization. Move In and Out Including Cleanup	Lump Sum	1		
7	Seal Welding of Upper Torus Lap Seam	Lump Sum	1		
8	Grid-Bee Mixer	Lump Sum	1		
9	Roof Handrail	Lump Sum	1		
TOTAL BASE BID 400,000 GALLON TOWER 1					

**1.0 SCHEDULE NO. 1
CLEANING, REPAIRING AND PAINTING
400,000 GALLON ELEVATED WATER STORAGE TANK
TOWER NUMBER 1
KLM PROJECT MN 3408
OTSEGO, MINNESOTA**

Accompanying this bid is a bidder's bond, certified check or cash deposit in the amount of \$_____, which is at least 5 % of the amount of the/my/our bid made payable to the Owner, and the same is forfeiture in the event of default on the part of the undersigned or failure on the part of the undersigned to execute the prescribed contract and bond within ten (10) days after its submittal to me/us.

In submitting this bid, it is understood that the Owner retains the right to reject any and all bids and to waive irregularities and informalities therein that do not result in a competitive advantage to the bidder and to award the contract to the best interests of the Owner.

In submitting this bid, it is understood that payment will be by cash or check.

It is understood that bids may not be withdrawn for a period of 45 days after the date and time set for the opening of bids. It is understood that the Owner reserves the right to retain the bid guarantee of the three (3) lowest bidders as determined by the Owner for a period not to exceed 45 days after the date set for the opening of bids.

If awarded the contract, we agree to the following schedule: **Start on or before May 1, 2017 (flexible start) and be completed by July 3, 2017 (63 calendar days).**

Respectfully submitted,

	(A Corporation)	
	(An Individual)	
Name	(A Partnership)	Federal Employer ID No.
Signature		Contracting Company
Printed Title		Address
Printed Name of Signer		Phone Fax

2.0 BOND CERTIFICATION

If awarded this contract, the name of the Bonding Company, which will furnish the bond, securing the contract is the _____; a corporation organized under the laws of the State of _____, and the Attorney-in-fact of said bonding company who will execute the bond is _____. The bond will be executed in _____ County, State of _____.

A. If bidder is an Individual:

_____ Signature	_____ Business Address
_____ Print Name of Signer	_____ Telephone Number
_____ Title	_____ Fax Number
_____ Name of Business	

B. If bidder is a Partnership:

_____ Signature	_____ Business Address
_____ Print Name of Signer	_____ Telephone Number
_____ Title	_____ Fax Number
_____ Name of Business	
_____ Partners	_____ Address
_____ _____	_____ _____
_____ _____	_____ _____

C. If bidder is a Corporation:

_____ Signature	_____ For: a corporation, incorporated under the laws of the State of _____.
_____ _____	
_____ Name and Address	
_____ President	
_____ Vice-President	
_____ Secretary	
_____ Treasurer	_____ Corporate Seal

3.0 BIDDER'S QUALIFICATION STATEMENT

Page 1 of 3

1. The name, address and phone/fax number of the bidder.

Name _____

Address _____

Phone/fax _____

2. Years in business _____

3. List of contractor owned equipment available for this project.

Attach as separate submittal, if necessary.

4. An attached financial statement of the bidder prepared in accordance with Standards established by the American Institute of Certified Public Accountants must accompany each bid.

5. List bank references, including contact name, address and telephone number.

6. List of equivalent type projects performed within the last four- (4) years. Attach as submittal, if necessary.

1. Name of Client _____ Date _____

Name of Contact _____ Phone _____

Description of Project _____

Capacity of Water Tank _____

2. Name of Client _____ Date _____

Name of Contact _____ Phone _____

Description of Project _____

Capacity of Water Tank _____

3. Name of Client _____ Date _____

Name of Contact _____ Phone _____

Description of Project _____

Capacity of Water Tank _____

4. Name of Client _____ Date _____

Name of Contact _____ Phone _____

Description of Project _____

Capacity of Water Tank _____

5. Name of Client _____ Date _____

Name of Contact _____ Phone _____

Description of Project _____

Capacity of Water Tank _____

6. Name of Client _____ Date _____

Name of Contact _____ Phone _____

Description of Project _____

Capacity of Water Tank _____

3.0 BIDDERS QUALIFICATION STATEMENT
Page 2 of 3

7. List of person(s) who are employed by you and will supervise and be available to perform the work on this project and the number of years of experience.

	Names:	Years of experience
Project Manager:	_____	_____
Superintendent:	_____	_____
Foreman:	_____	_____
Personnel:	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

8. A list of similar work performed under the direction of a Professional Engineer or Registered Architect. List three (3) such firms, listing your most recent projects.

1. Name of E/A _____ Date _____
 Contact Person _____ Phone _____
 Description of Project _____
 Owner of Water Tank _____
2. Name of E/A _____ Date _____
 Contact Person _____ Phone _____
 Description of Project _____
 Owner of Water Tank _____
3. Name of E/A _____ Date _____
 Contact Person _____ Phone _____
 Description of Project _____
 Owner of Water Tank _____
4. Name of E/A _____ Date _____
 Contact Person _____ Phone _____
 Description of Project _____
 Owner of Water Tank _____

9. List three (3) material suppliers as references, including name and phone number.

10. Such additional information as will assist the Owner and Engineer in determining whether the bidder is adequately prepared to fulfill the contract. Attach as submittal, if necessary.

3.0 BIDDERS QUALIFICATION STATEMENT

Page 3 of 3

11. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this statement of contractor's qualifications.

12. State the true, exact correct and complete name of the partnership, corporation or trade name under which you do business, and the address of the place of business. If a corporation, state the name of the President and secretary. If a partnership, state the names of the partners. If a trade name, state the names of the individuals who do business under the trade name. **It is absolutely necessary that this information be provided.**

Correct and complete name of bidder.

12.1 The Business is a: _____

12.2 The address of the principal place of business is:

12.3 Telephone Number: _____

12.4 The names of the corporate officers, or partners, or individuals doing business under at trade name are as follows: _____

Dated at: _____ this _____ day
of _____, 2016.

By: _____

Attest: _____

4.0 LIST OF PROPOSED SUBCONTRACTORS

Each bidder shall enter in the space provided the name(s) of major subcontractors the bidder proposes to employ and the type of work the subcontractor will perform

A major subcontractor is defined as a subcontractor whose subcontract constitutes approximately five (5) percent or more of the total contract price.

Subcontractor Name, Address, Phone Number	Work
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**5.0 SUBCONTRACTOR’S QUALIFICATION STATEMENT
Page 1 OF 2**

Please fill out a form for each subcontractor the contractor proposes to employ. Copy this form if additional forms are required and attach as submittals to Bid.

1. The name, address and phone/fax number of the Subcontractor.
 Name _____
 Address _____
 Phone/fax _____
2. Years in business _____
3. List of subcontractor owned equipment available for this project.
 Attach as separate submittal, if necessary.

4. An attached financial statement of the subcontractor prepared in accordance with Standards established by the American Institute of Certified Public Accountants must accompany each bid.
5. List bank references, including contact name, address and telephone number.

5.0 SUBCONTRACTOR'S QUALIFICATION STATEMENT
Page 2 OF 2

6. List of equivalent type projects performed within the last four (4) years. Attach as submittal, if necessary.

1. Name of Client _____ Date _____
 Name of Contact _____ Phone _____
 Description of Project _____
 Capacity of Water Tank _____

2. Name of Client _____ Date _____
 Name of Contact _____ Phone _____
 Description of Project _____
 Capacity of Water Tank _____

3. Name of Client _____ Date _____
 Name of Contact _____ Phone _____
 Description of Project _____
 Capacity of Water Tank _____

4. Name of Client _____ Date _____
 Name of Contact _____ Phone _____
 Description of Project _____
 Capacity of Water Tank _____

7. List of person(s) who will supervise and be available to perform the work on this project and the number of years of experience.

	Names:	Years of experience
Project Manager:	_____	_____
Superintendent:	_____	_____
Foreman:	_____	_____
Personnel:	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

8. Such additional information as will assist the Owner and Engineer in determining whether the subcontractor is adequately prepared to fulfill the contract. Attach as submittal, if necessary.

6.0 AFFIDAVIT OF NON-COLLUSION

I hereby swear or affirm under penalty for perjury:

1. That I am the bidder (if bidder is an individual), a partner (if bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the bidder is a corporation):
2. That the attached bids have been arrived at by the bidder independently, and have been submitted without collusion with, and without any agreement, understanding, or planned common course of action with, any vendor of materials, supplies, equipment or services described in the invitation to bid, designed to limit independent bidding or competition:
3. That the contents of the bid have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid or bids, and will not be communicated to any such person prior to the official opening of the bid or bids; and
4. That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

All bidders must sign the affidavit of non-collusion and submit it at the bid opening as a condition of the contract; such affidavit shall become a part of the contract with the Owner upon formal execution of the Contract.

Signed _____

Firm Name _____

Subscribed and sworn to before me this _____ day of _____, 2016.

Notary Public

My Commission expires _____

Bidder's Federal E. I. Number
(Number used on Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941)

7.0 ADDENDUM ACKNOWLEDGMENT

The undersigned acknowledges the receipt of the following addenda, but (s)he agrees that (s)he is bound by all addenda whether or not listed herein:

Acknowledged by Signature

Printed name of Signer

Title of Signer

Addendum No. 1 Dated: _____ Signature: _____

Addendum No. 2 Dated: _____ Signature: _____

Addendum No. 3 Dated: _____ Signature: _____

Addendum No. 4 Dated: _____ Signature: _____

Addendum No. 5 Dated: _____ Signature: _____

Addendum No. 6 Dated: _____ Signature: _____

8.0 RESPONSIBLE CONTRACTOR VERIFICATION

Per Minnesota Statute 16C.285, bidders must complete and attach “Attachment A – Responsible Contractor Verification and Certification of Compliance.”

ATTACHMENT A

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE

CITY PROJECT NUMBER: 4201701

<p>Minn. Stat. § 16C.285, Subd. 7. IMPLEMENTATION. ... any prime contractor or subcontractor that does not meet the minimum criteria in subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project...</p>	
<p>Minn. Stat. § 16C.285, Subd. 3. RESPONSIBLE CONTRACTOR, MINIMUM CRITERIA. "Responsible contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:</p>	
(1)	<p>The Contractor:</p> <ul style="list-style-type: none">(i) is in compliance with workers' compensation and unemployment insurance requirements;(ii) is currently registered with the Department of Revenue and the Department of Employment and Economic Development if it has employees;(iii) has a valid federal tax identification number or a valid Social Security number if an individual; and(iv) has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative.
(2)	<p>The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:</p> <ul style="list-style-type: none">(i) repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of \$25,000 or more within the three-year period;(ii) has been issued an order to comply by the commissioner of Labor and Industry that has become final;(iii) has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;(iv) has been found by the commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;(v) has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or(vi) has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;*

(3)	The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order;*
(4)	The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office;*
(5)	The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification;*
	* Any violations, suspensions, revocations, or sanctions, as defined in clauses (2) to (5), occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.
(6)	The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions; and
(7)	All subcontractors that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).

Minn. Stat. § 16C.285, Subd. 5. SUBCONTRACTOR VERIFICATION.
A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project.
If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.
A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Minn. Stat. § 16C.285, Subd. 4. **VERIFICATION OF COMPLIANCE.**

A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3 at the time that it responds to the solicitation document.

A contracting authority may accept a sworn statement as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. Failure to verify compliance with any one of the minimum criteria or a false statement under oath in a verification of compliance shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract on the project for which the verification was submitted.

A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria.

CERTIFICATION

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

- 1) My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. § 16C.285,**
- 2) I have included Attachment A-1 with my company's solicitation response, and**
- 3) if my company is awarded a contract, I will also submit Attachment A-2 as required.**

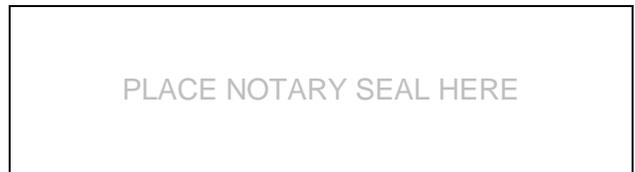
Authorized Signature of Owner or Officer:	Printed Name:
Title:	Date:
Company Name:	

Sworn to and subscribed before me this

_____ day of _____, 20____,

Notary Public

My Commission Expires: _____



NOTE: Minn. Stat. § 16C.285, Subd. 2, (c) If only one prime contractor responds to a solicitation document, a contracting authority may award a construction contract to the responding prime contractor even if the minimum criteria in subdivision 3 are not met.

ADDITIONAL SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-2	
<p>By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:</p> <p>All additional subcontractors listed on Attachment A-2 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285.</p>	
Authorized Signature of Owner or Officer:	Printed Name:
Title:	Date:
Company Name:	

Sworn to and subscribed before me this

_____ day of _____, 20____,

Notary Public

My Commission Expires: _____

PLACE NOTARY SEAL HERE

PROJECT REQUIREMENTS
KLM Project MN 3408
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1.0 PROJECT DESCRIPTION

- 1.1 **Project MN 3408 – Tower Number 1, elevated water tank:** This project includes the following work on the 400,000 gallon elevated water storage tank.
- a. Cleaning, sandblasting, and painting interior and exterior surfaces. Full containment is mandatory.
 - b. Miscellaneous structural repairs.
 - c. Welding and grinding to remove erection bracket scab marks and weld spatter.
 - d. The reservoir is located on 15997 70th Street NE, Otsego, Minnesota. The tank is an elevated storage tank as shown in Appendix A. The tank diameter is approximately 58-feet with a high water level of 144'-6", and an overall height of 147-feet (+/-) to the top of the vent/finial. The LWL is approximately 109'-6".

2.0 PLANS AND SPECIFICATIONS

2.1 It is intended that the drawings and specifications shall form a guide for the entire work to be accomplished under the Contract. Where an item is not specifically mentioned and it is reasonably necessary for the complete work, the contractor shall furnish and install it under this Contract. The specifications take precedence over the drawings. Should questions or conflicts arise, they shall be directed to the Engineer in writing, the Engineer's decision is final in the resolution of questions or conflicts. Neither the drawings nor specifications shall be considered complete without the other. Where an item is mentioned in the specifications but not the drawings, or vice versa, it shall be considered to be binding under the contract as though mentioned in both.

3.0 PROJECT SCHEDULE

3.1 **Project MN 3408 – Tower Number 1, elevated water tank:** If awarded the contract, we agree to the following schedule: **Start on or before May 1, 2017 and be completed by July 3, 2017 (63 calendar days).**

3.2 The contractor shall prepare a bar chart construction schedule, showing the various phases of work, duration and completion date(s) expected in order to meet the completion date. **The bar chart construction schedule must be submitted for review and approval by the Engineer/Owner prior to the pre-construction conference. Work on the project will not begin without an approved construction schedule.**

3.3 Unless otherwise specified, the contractor shall begin work under this Contract within ten (10) days after the date designated in a written order from the Owner to begin work. The rate of progress shall be such that the work will be completed in accordance with the contractor's submitted construction schedule and the terms of the Contract Documents on or before the completion date and period named in the Contract Documents. If in the opinion of the Engineer proper progress is not being maintained, changes shall be made in the contractor's operations to assure proper progress.

3.4 The Contractor expressly agrees that the period named in the Contract Documents includes allowances for all hindrances and delays incident to the work, **including 9 days**

to account for the average amount of unfavorable weather conditions, based on NOAA normal and mean averages, weather records, over the actual construction schedule. No claim shall be made by the contractor for hindrances or delays from any cause during the progress of the work except as specifically allowed in the General Conditions.

4.0 WORK TO BE DONE BY OWNER

4.1 Contractor shall provide a minimum 24 hour notice to the Owner for all requests for work to be completed by the Owner.

4.2 The Owner will perform emptying and refilling of the reservoir and will operate all water main valves or reservoir drains.

4.3 Limited construction power will be available from existing sources at the construction site from buildings or power poles. **Additional electrical requirements and construction power required by the Contractor will be the Contractor's responsibility.**

5.0 CONTRACTOR'S USE OF FACILITIES

5.1 Contractor's office facilities, telephone, materials storage, sanitary facilities, workman facilities (change room, showers, lunchroom), and security shall be the responsibility of the Contractor.

5.2 The contractor shall confine all equipment, apparatus, the storage of materials and the operations of workers to the Owner's property, as directed by the Engineer or Owner and shall not unreasonably encumber the premises with materials or equipment.

5.3 The contractor shall furnish, erect and maintain warning lights, signs and barricades as required by the specifications, Owner, Engineer and ordinances to adequately warn the public from hazardous site conditions, materials, Contractors equipment, lead paint removal, etc., resulting from the construction. The contractor shall comply with all local and State ordinances such as working hours, noise abatement, etc. All equipment shall have effective mufflers on engine exhaust systems and compressors, dust collectors, etc., shall be quiet type models.

6.0 CONTRACT DOCUMENTS

6.1 Four (4) copies of the contract documents will be prepared by the Engineer. All copies will be submitted to the Contractor and the Contractor shall execute the Contract Documents, insert four (4) executed copies of the required bonds, insurance and power of attorney, and submit all copies to the Engineer for review and approval. The Engineer shall upon approval, forward the Contract Documents to the Owner for execution. The date of contract on the contract agreement and bond forms shall be left blank for filling in by the Owner. The certification date on the power of attorney document shall also be left blank for filling in by the Owner.

6.2 The owner will execute all copies (4), insert the date of contract on the bonds and power of attorney, retain the original and one (1) copy and forward one (1) copy each to, the Contractor, Engineer and surety company.

7.0 NOTICE TO PROCEED

7.1 The Engineer shall mail to the contractor a Notice to Proceed after the Owner/Engineer receives all the necessary Contract Documents and insurance information.

7.2 The Contractor shall provide to the Owner and Engineer, a written request to begin operations, seven (7) business days prior to beginning his operations. Any work performed by the Contractor prior to inspections by the on-site inspector will be deemed unacceptable and shall be replaced at the Contractor's expense.

8.0 PROJECT MEETINGS

8.1 Before the construction work begins, a Public Meeting will be arranged in Otsego, Minnesota wherein the Contractor, representatives of the Department of Public Works, Engineer, and the adjoining property owners will discuss the proposed work. The Contractor will present his proposed sequence of the work for the project and provide information to the property owners. Questions posed by the adjacent property owner's will be answered by the Owner, Engineer and Contractor.

8.2 The Contractor shall provide for attendance by authorized representatives of the Contractor and all major subcontractors at required Project Meetings. The same personnel will represent the Contractor or subcontractors at all project meetings throughout the project. Subcontractors, material suppliers, and others may be invited by the Engineer to attend project meetings, in which their aspects of the work are involved. Persons designated by the contractor to attend and participate in project meetings shall have all required authority to commit the contractor to solutions agreed upon in the project meetings. Any project meeting where the Contractor or his designated representative is required to attend, but either chooses or fails to attend, the Contractor agrees to abide by decisions made at that meeting.

8.3 A preconstruction conference will be held prior to commencing the various phases of the work and all representatives required to attend will be notified by the Engineer.

8.4 Weekly progress meetings will be held at a time and place to be established by the Owner. The agenda or items to be discussed at project meetings shall be prepared and distributed by the Engineer or Owner's representative.

9.0 CONTRACTOR'S WORK HOURS

9.1 Authorized work hours for this project shall be 7:00 AM to 7:00 PM, Monday through Friday plus 8:00 AM to 5:00 PM Saturday. No work shall be performed outside

of these hours or on Sundays or legal holidays without the written approval of the Owner or Engineer. A written request by the Contractor must be submitted to the Engineer to work night hours (after 7:00 PM) or second shift. Night hours (second shift) shall only be permitted with prior written approval. Approval to work night hours (second shift) may be revoked at any time if the contractor fails to maintain adequate equipment and supervisor for the prosecution and quality control of the work at night (second shift) or if such work becomes offensive to residents in the surrounding neighborhood.

9.2 The Contractor expressly agrees to be responsible for, and to pay the Owner for the inspector's hours and expenses for all work required past the daily working hours, on Sundays and legal holidays. These fees may include any accompanying contract administration, engineering, project management or project supervision time. The hourly man-hour rates will be in conformance with the Engineer's current project fee schedule. Overtime work is 1.5 times the hourly rate. Payment to the Owner shall be made by deductions to progress or final payments.

9.3 The Contractor shall be required to secure from the City of Otsego a temporary noise permit for the duration of the project. The Owner has a noise ordinance that governs noise levels on construction projects. Noise levels shall be regulated in accordance with all applicable City and State ordinances. Noise pollution is the presence of any noise or combination of noises in such quantity, at such levels, of such nature and duration or under such conditions as could potentially be injurious to human health, safety, welfare, or to animal life, or could interfere unreasonably with the enjoyment of life or property.

10.0 QUALITY ASSURANCE

10.1 Substitution of materials, equipment or methods required by the Contract Documents must be approved in writing by the Engineer prior to use.

10.2 The contractor is responsible to ensure that all work shall be carried out in a workmanlike manner that will protect the workman, surrounding property and the public from damage or danger. All workman employed on the site shall be skilled in the use of the equipment and materials used for this project. An experienced superintendent and/or foreman shall be present at all times during the execution of the work who shall be thoroughly familiar with the specified requirements and the materials and methods needed for their execution and who shall direct all work performed

10.3 Inspection: The contractor shall notify the Owner's on-site inspector not less than 24 hours prior to welding, grinding, abrasive blasting, priming or application of primer or finish coats. Any work performed without the 24 hour notification and the presence of the on site inspector will be deemed unacceptable and shall be removed and replaced. The on-site inspector will inspect all phases of the work. Any areas not in conformance with the specifications will be corrected as directed by the Engineer, Inspector or Owners representative.

11.0 REJECTED WORK AND MATERIALS

11.1 Upon verbal or written notice from the Engineer, Inspector or Owners representative the Contractor shall remove and replace all work and materials rejected as defective, unsound, improper or in any way failing to conform to the requirements of the Contract Documents. The Contractor shall at its sole expense make good all work damaged by such removal and shall promptly replace all materials damaged or improperly worked by the Contractor and re-execute the work in accordance with the Contract. This includes re-placing the work of any other Contractor that is in any way affected by the removal of defective work. The obligations of the Contractor under this section shall not be extended to defective materials or equipment supplied by the Owner or previously installed by him. Any contractor supervisor or workman who refuses to make these corrections or refuses to do quality work as interpreted by the inspector, shall be deemed not in compliance with section GC-31 of the general conditions and shall be immediately removed and replaced with a competent individual.

12.0 LIQUIDATED DAMAGES

12.1 Liquidated damages in the amount of \$1,000.00 will be deducted from any moneys due the Contractor for each and every calendar day that the work remains uncompleted beyond the completion date as specified or amended during the course of the project.

12.2 In addition, the Contractor shall pay the Inspector's hours, travel and subsistence for all inspection work required by the Engineer or Owner past the completion date. These fees may include any accompanying contract administration, engineering, project management or project supervision time. The Owner will deduct liquidated damages for additional inspection from any monies due the contractor.

12.3 Should the Contractor fail to complete the work on or before the original date set forth for completion in the Contract, or on or before the corrected date as granted by extensions of time for completion, the Owner may permit the Contractor to proceed and in such case there shall be deducted from any monies due (or that may become due the Contractor) a sum as specified above for each and every calendar day, exclusive of Sundays and Holidays, that the work shall remain uncompleted. This sum shall be considered and treated, not as a penalty but as the cost of field and office engineering, inspection and liquidated damages.

12.4 Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time of completion may have been extended, shall in no way operate as a waiver on the part of the Owner of any of its rights under the Contract.

12.5 Neither by the taking over of the work by the Owner nor by the termination of the Contract, shall the Owner forfeit the right to recover liquidated damages from the Contractor or surety thereof for failure to complete the Contract.

12.6 If the Contractor should neglect to prosecute the work properly, or fail to perform any provisions of the Contract; the Owner, after three days written notice to the Contractor, may without prejudice to any other remedy the Owner may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor, provided, however, that the Engineer shall approve both such action, and the amount charged to the Contractor.

13.0 INCENTIVE FOR PROJECT COMPLETION AHEAD OF SCHEDULE

13.1 **NOT PART OF THIS PROJECT OR CONTRACT.**

14.0 EMERGENCY RETURN TO SERVICE

14.1 In an emergency, the Owner reserves the right, upon 24 hours notice to the contractor, to return the tank to service. In case of an emergency return to service the contractor, agree to negotiate, in good faith, with the Owner his extra costs and damages associated with this break in the construction schedule.

15.0 APPLICATION FOR PAYMENT

15.1 Application for payments must be submitted to the Owner five (10) business days prior to scheduled City Council meetings for inclusion on the Agenda. The City Council meets the **2nd and 4th Monday of each month.**

15.2 The Contractor shall prepare and submit, in a timely manner, to the Engineer for approval a breakdown estimate covering each lump sum or quantity Bid Item for which partial payments are desired. The form to be used will be provided by the Owner. Each estimate, showing the value of each kind of work, shall be approved by the Engineer before any partial payment estimates are prepared for submittal. The sum of the item listed in the breakdown estimate shall equal the contract lump sum or quantity prices. Overhead, materials delivered to the site but not installed and profit shall not be included as separate items.

15.3 An unbalanced estimate providing for over-payment to the Contractor of work, which would be performed first, will not be accepted. Breakdown estimates shall be revised and resubmitted until acceptable to the Engineer or Owner. The estimated cost of replacing, repairing or rebuilding rejected work or workmanship or the cost of replacing materials which do not conform to the Contract Documents will be deducted from the estimated value. The Contractor shall furnish to the Engineer such detailed information as may be requested to aid in the approval of partial payments.

16.0 RETAINAGE

16.1 After the application for payment has been approved by the Engineer and the Owner, the Owner will pay to the Contractor ninety-five (95) percent of the estimated value less any previous payments unless otherwise required.

17.0 SUBSTANTIAL COMPLETION

17.1 Substantial completion is defined as that time when, upon approval of the Engineer and Owner, the tank has been disinfected, re-filled, tested and is returned to service. Substantial completion does not include final clean-up or site restoration and may or may not include, at the discretion of the Engineer, work that will not affect return of the tank to service.

17.2 When the work has been substantially completed and at a time mutually agreeable to the Owner, Engineer and the Contractor, the Engineer will make final inspection(s) of the work and report to the Owner and Contractor the findings as to the acceptability and completeness of the work. The Owner, Engineer and contractor will sign project acceptance documents that will include a project completion punch list.

18.0 PROJECT CLOSE OUT AND FINAL SUBMITTALS

18.1 Before final acceptance of the work by the Owner, the Contractor shall submit to the Engineer the following:

- a. In duplicate, a notarized affidavit stating that all subcontractors, vendors, persons or firms who have furnished labor, services or materials for the work have been fully paid.
- b. In duplicate a statement from the surety consenting to the making of the final payment and acknowledgment of the start of the warranty period.
- c. In duplicate, documentation as may be otherwise required by the Contract Documents, such as Minnesota Department of Revenue forms, SD-E Exemption from Surety Deposits for Out-of -State Contractors, IC-134 Withholding Affidavit for Contractors, etc.

19.0 FINAL PAYMENT

19.1 After official approval and acceptance of the work by the Owner, the Engineer will be authorized to prepare a final estimate of the work done under this contract. Preparation of the final payment will not be authorized until documentation is submitted that the punch list items are completed and all submittals have been received by the Engineer.

20.0 GUARANTEE

20.1 The Contractor guarantees that the equipment, materials and workmanship furnished under this Contract will be as specified and will be free from defects for a period of two (2) years from the date of substantial completion.

20.2 Before expiration of the two (2) year guarantee period, the tank shall be subject to draining and inspection by representatives of the Owner, Engineer and Contractor. If an Inspection Report is prepared by the Engineer one (1) copy of the report will be furnished to the Contractor for his review.

20.3 Within the guarantee period and upon notification of the Contractor by the Owner, the Contractor shall promptly make all needed adjustments, repairs or replacements arising out of the defects which in the judgment of the Engineer, become necessary during such period. The cost of all materials, parts, repair of parts, labor, transportation, supervision, special tools, rigging and supplies required for replacement of parts, repair of parts, or correction of failures shall be paid by the Contractor, or the surety under the terms of the Performance Bond.

20.4 The Contractor also extends the terms of the guarantee to cover repaired parts, workmanship and all replacement parts furnished under the guarantee provisions for a period of one (1) year from the date of their installation.

20.5 If within ten (10) days after the Owner gives the Contractor notice of a defect, failure, or abnormality of the work, the Contractor neglects to make, or undertake with due diligence to make, the necessary repairs or adjustments, the Owner is hereby authorized to make the repairs or adjustments or order the work to be done by a third party, the cost of the work to be paid by the Contractor or by the surety under the terms of the Performance Bond.

TECHNICAL SPECIFICATIONS**KLM Project MN 3408****INDEX**

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1.0 DESCRIPTION OF BID ITEMS

PROJECT MN 3408 – TOWER NUMBER ONE 400,000 GALLON ELEVATED WATER TANK

1.1 Structural Modifications: Bid Item #1, Schedule 1.0

Note: No welding over coated steel. All areas that require welding are to be abrasive blasted before any welding is started.

1. Replace the lid at the top of the drywell tube with an aluminum lid. Install a locking hasp on the inside of the lid for security. See photo 22
2. Install anchor points on the exterior (roof side) of the drywell tube for securing safety harnesses with lanyards during egress from the drywell and transitioning from the drywell tube safety climb device to the tower roof. See photo 22.
3. Replace the tank vent/finial with a 24-inch diameter pressure pallet style, removable top mushroom vent, similar to the one shown on KLM Drawing No. 37. 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. See photo 22.
4. Install one (1), 24-inch diameter round, hinge covered, roof ventilation manway, approximately 180 degrees from the existing roof manway. See KLM Drawing No. 25.
5. Replace the tank bowl drain coupling and plug with stainless steel fittings. See KLM Drawing No. 23. Add a "T" handle wrench for the drain plug in the tank bowl. See KLM Drawing No. 5.
6. Remove the existing frost free drain, coupler, and connecting line to the overflow pipe in its entirety. Repair the resulting holes in the bowl and overflow pipe by seal welding plates in place including back-gouging where applicable. See photo _____.
7. Modify the existing mud ring on the inlet/outlet pipe. Currently it is not connected to the pipe.
8. Replace the gasket on the 24-inch diameter round bowl manway. See photos 3 and 16.
9. Install a new 24-inch diameter, pressure style manway in the tower bowl or drywell tube at the direction of the engineer. This manway should be located 180 degrees from the existing manway and include a ladder from

the top platform to the bowl for safe access. Refer to KLM Drawing No. 26.

10. Install ports in the center of each of the two (2) platform floors, including the condensate ceiling, to facilitate containment during the next reconditioning. See photos 7 and 8, and KLM Drawing No. 52.

1.2 Surface Repairs: Bid Item #2, Schedule 1.0

1. 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, stiffener rings, manway curbs and covers.
2. For bidding purposes, it is estimated that there are approximately **25 man-hours** to perform the work. 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 Section GC-22 Modifications of the General Conditions.
3. The repaired areas shall conform to the surface preparation requirements of Section 4 Appendix C, NACE Standard SP0178-2007, NACE Weld Preparation Designation "C".
4. The unit price for surface repairs shall include all costs for labor, materials, and equipment to properly complete all work as described above, including all incidental work as shown on the drawings, described in the specifications, or otherwise required to complete the work. Measurement of the man-hours required to complete the surface repairs shall include each hour of labor performed to physically repair by welding or grinding existing surface defects to the required condition. Measurement will be made for each man-hour performed by the Contractor to complete the work. Such measurements of surface repair man-hours will be recorded and made by the Engineer and all decisions will be final. All work incidental to performing these surface repairs, including but not limited to rigging, blasting and surface preparation, or otherwise required to complete the work shall be included in the unit price for the work. The services of a person on the ground (ground man), as required by OSHA, during times when surface repair work is being performed, shall also be considered incidental work, and expenses for such work or services shall be included in the unit price for the work. Hours for a ground man will not be included in the measurement of the surface repair man-hours.

1.3 Interior Wet Abrasive Blast and Coating: Bid Item #3, Schedule 1.0

1. Remove all surface contaminants in accordance with SSPC-SP 1, Solvent Cleaning. Abrasive blast entire interior to an NACE No. 2/SSPC-SP 10 Near White Metal Blast Cleaning.
2. Apply a zinc/epoxy coating system as specified in section 7.
3. Apply by brush one (1) additional coat of intermediate coat to ensure a uniform coat is thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, and other irregularities in the surface.
4. Perform low voltage wet sponge testing of all areas below the High Water Level (HWL) to ensure the coating in this area meets NACE Condition "A" Pinhole Free. The applied coating film below the HWL shall be continuous.
5. Clean up and sterilize tank per section 10.0 and 14.0. 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.

1.4 Interior Dry Spot Repair and Coating: Bid Item #4, Schedule 1.0

1. 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 light-colored polyamide epoxy system as specified in Section 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, top two (2) feet of the pedestal and other random coating failures as directed by the Engineer.
2. For bidding purposes, it is estimated that there are approximately **1200 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 Section GC-22 Modifications of the General Conditions.
3. Apply a zinc/epoxy coating system as specified in section 7.
4. Apply by brush one (1) additional coat of intermediate coat to ensure a uniform coat is thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, and other irregularities in the surface.
5. Clean up tank per section 10.0. 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

1.5 Exterior Abrasive Blast and Recoating: Bid Item #5, Schedule 1.0

1. Remove all surface contaminants in accordance with SSPC-SP 1 Solvent Cleaning. Abrasive blast entire exterior to a NACE No. 3/SSPC-SP 6 Commercial Blast Cleaning. This specifically includes all antenna, coaxial cable and miscellaneous support brackets.
2. Apply a zinc/epoxy/urethane/fluoropolymer coating system as specified in Section 7 of this Specification.
3. Install a non-skid walkway to the complete roof area inside the roof handrail assembly per Section 7.
4. Exterior coating may only be spray applied within the containment. Painting outside of containment must be by brush or roller.
5. Clean up per section 10.0. The Contractor shall be fully responsible for proper testing, waste evaluation, waste tracking, documentation and disposal of exterior waste generated per federal (RCRA/EPA) and State of Minnesota, Pollution Control Agency Regulations and the Specifications.

1.6 Exterior Abrasive Blast Containment: Bid Item #5, Schedule 1.0

1. Provide containment of the exterior abrasive blasting operation in conformance with Section 5.
2. As specified in Section 5 of this Specification, 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.
3. Clean up per section 10.0. The Contractor shall be fully responsible for proper testing, waste evaluation, waste tracking, documentation and disposal of exterior waste generated per federal (RCRA/EPA) and State of Minnesota, Pollution Control Agency Regulations and the Specifications.

1.7 Disposal of Spent Abrasive: Bid Item #5, Schedule 1.0

1. Recover, remove and dispose of properly, all spent abrasives, dust, dirt, paint chips, spent solvent and paint containers, etc., as specified in Section 10.0 of the Specification. Refer to the Paint Test results in Appendix D.

1.8 Lettering - Bid item #5, Schedule 1.0

1. The required lettering and logo are shown in Appendix E. The location of the new logo and lettering shall be as directed by the Owner or Engineer.

1.9 Mobilization, Bid Item #6, Schedule 1.0

1. Mobilization shall consist of all work and operations, including but not limited to those necessary for: the movement of personnel, equipment, supplies, and incidentals to and from the project site; the establishment and subsequent removal of all offices, Contractor's buildings, and other facilities necessary for work on the project; clean up of the tank and site per Section 10.0; sterilization of the tank per Sections 10.0 and 14.0; and all other work and operations which must be performed or costs incurred

prior to beginning and after completion of work on the various items on the project site.

2. 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.
3. Site turf restoration shall consist of all work and materials necessary to excavate the site in preparation for providing and placing new topsoil, to achieve a minimum topsoil depth of 6-inches, lawn seed, appropriate fertilizer, and mulch or erosion mat. If mulch is used it shall be crimped or tacked down so that it provides a uniform and consistent mulch bed for the seed and doesn't blow away in the wind. Work shall include the installation of hoses and sprinklers connected to the water hydrant, with back flow preventer and water meter, which can be turned on and off and used to water the restoration area completely in order to ensure establishment of the grass. The Owner will provide the meter if required and will assist the contractor by operating the sprinklers when the contractor is not on site. Contractor will be completely responsible for coordinating this with the Owner. Turf restoration of all disturbed area will be completed to the Owner's satisfaction.

1.10 Seal Welding of Upper Torus Lap Seam, Bid Item #7, Schedule 1.0

1. Field verify with rigging if the horizontal lap seam on the upper torus is seal welded. If no weld is present, seal weld the seam to comply with AWWA D100-11.

1.11 Grid-Bee Mixer, Bid Item #8, Schedule 1.0

1. Furnish and install a Grid-Bee GS-9 Submersible Mixer in the tower including bracketing, a watertight penetration, a NEMA 4X junction box with SCADA capability, and all required electrical and conduit. Install a combination light switch and pilot light in the base of the dry riser near the existing electrical panel.

1.12 Roof Handrail, Bid Item #9, Schedule 1.0

1. Remove and replace the 13-foot diameter roof handrail with an OSHA approved 16-foot diameter handrail.

2.0 SUBMITTALS

- 2.1 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. Shop drawings.
 4. Welder certifications.
 5. Welding procedures.

6. Containment or environmental compliance plan.
7. TCLP sampling plan.
8. Certified statement on lead free coatings.
9. Abrasive and coating materials, including product data sheets and MSDS.
10. Coating procedures and work plan.
11. Color selection draw-downs for each area and color selected, including logo, with manufacturer, color name, and color number.
12. Epoxy or urethane caulking material.
13. Cost breakdown statement of Structural Modifications in Section 1.1.
14. Tank interior cleaning and disinfection procedures.

2.2 Submit five (5) sets of shop drawings for the following items.

1. Tank drain plug "T" handle wrench.
2. Bowl pressure style manway, 24 inches in diameter.
3. Roof ventilation manway, 24 inches in diameter.
4. Roof vent/finial with removable cover
5. Roof handrail
6. Tank drain modification
7. Access tube lid
8. Landing ports

2.3 Shop Drawings.

1. Shop drawings shall be presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable ENGINEER to review the information as required. Details shall be identified by reference to sheet and detail, schedule or locations shown on contract drawings. After approval by the Engineer, one (1) copy of shop drawings will be submitted to the Owner by the Engineer.

2. The minimum sheet size shall be 8-1/2" x 11".

3. The CONTRACTOR shall:

1. Review shop drawings and samples prior to submission.
2. Determine and verify:
 1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance to Specifications.
3. Coordinate each submittal with requirements of work and of Contract Documents.
4. Notify ENGINEER in writing, at time of submission, of any deviations in submittal from requirements of Contract Documents.

Any such deviations permitted by ENGINEER will require modifications of Contract Documents.

5. Begin no fabrication or work either which requires submittals until return of submittals by ENGINEER with ENGINEER stamp, as "no exceptions taken" or "make noted corrections".
- 2.4 A minimum of two (2) copies plus the quantity of copies the CONTRACTOR wants returned of shop drawings shall be submitted to the ENGINEER for review. Each copy shall contain the following submissions.
1. Date of submission and dates of any previous submissions.
 2. Project title and number.
 3. Contract identification.
 4. Names of:
 1. CONTRACTOR
 2. Supplier.
 3. Manufacturer.
 5. Identification of product, with specification section number, equipment number and/or tag number.
 6. Field dimensions, clearly identified as such.
 7. Relationship to adjacent or critical features of work or materials.
 8. Applicable standards, such as ASTM or other specification numbers.
 9. Identification of deviations from Contract Documents.
 10. Identification of revisions on resubmittals.
 11. Unless the precise color and pattern is specifically described in the Contract Documents, and whenever a choice of color or pattern as available in a specified product, submit accurate color pattern charts to the ENGINEER for review and selection.
 12. A 4" x 4" blank space for CONTRACTOR and ENGINEER Stamps.
 13. Indication of CONTRACTOR'S approval, dated and signed, with wording similar to the following:

"Approved to be in conformance with the requirements of the Contract Documents".

- 2.5 Shop drawings stamped "amend and resubmit" shall be corrected and revised. Resubmittals shall be made as required for initial submittal. Resubmittals shall have all changes that have been made, including those other than requested by ENGINEER indicated.

3.0 WORKMANSHIP

- 3.1 All work of this Contract shall be done in a workmanlike 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.

- 3.2 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 dusty, 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.
- 3.3 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 applied by brush and roller 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.
- 3.4 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 intermediate coat.
- 3.5 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.

- 3.6 **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 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 paint.
- 3.7 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.
- 3.8 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. **No interior wet coating shall be applied by roller application that sheds any roller hairs into the coating.**
- 3.9 Finish coat shall be uniform in color and sheen without streaks, laps, runs, sags or missed areas.
- 3.10 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.

4.0 UNFAVORABLE WEATHER CONDITIONS

- 4.1 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 and inspection and approval by the Owner's representative.
- 4.2 The OWNER intends to monitor wind direction, wind speed, air temperature, steel temperature, dewpoint and relative humidity to ensure CONTRACTOR'S compliance with the listed conditions.
- 4.3 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 completing the work. The daily log shall be submitted to the ENGINEER or ENGINEER'S representative for comparison with the OWNER'S data and verification of compliance.

- 4.4 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. 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 Section 2.1, Submittals. See also Section 3 Workmanship and Section 11.0 Ventilation.

5.0 SURFACE PREPARATION

5.1 Exterior Abrasive Blast Containment - Bid Item #5, Schedule 1.0

1. 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 of 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 AND TO PROVIDE A REDUCTION OF DUST EXPOSURE FOR WORKERS.
2. 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.
3. 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 paint and 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 Owner reserves the right to accept or reject the Contractors proposed plan. The Contractor expressly agrees to abide by the decision of the Owner or Engineer in accepting or rejecting the Contractors wet abrasive blasting or environmental compliance plan.
4. **THE CONTRACTOR EXPRESSLY AGREES 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.**
5. 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.
6. The Contractor shall be fully responsible to provide 100 (%) percent impervious ground coverage in all areas adjacent to the tank for the purpose of ensuring recovery of (a minimum) 95 (%) percent 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.

7. The Contractor shall be fully responsible to provide 100 (%) percent 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 inter-mediate 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.

8. Disposal of Waste materials generated by the Contractor or his subcontractor(s) will be as specified in Section 10 of this Specification.

9. Raise aviation warning obstruction light above the level of the containment and top bonnet for the duration of the exterior containment.

5.2 Blast Cleaning - Bid Items #3, 4, and 5, Schedule 1.0

1. 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.

2. 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.** 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.

3. The use of a recyclable abrasive, such as steel grit, is neither specifically encouraged nor prohibited. Contractor's requesting the use of a recyclable abrasive must comply with the specified mil profile. Waste generated by this method of abrasive blasting will be considered Hazardous Waste and as such must be disposed of accordingly. Therefore, the provisions of Sections 10.4 and 10.6 are not applicable.

4. 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.

5. 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.

6. 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 reblasted up to and including 1 inch to 3 inch of the previous primer coating.

7. Take extra care during all blasting operations, to prevent damage or abrasive impingement upon previously applied-coated areas.

8. 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 3.2 (Workmanship) for additional temperature and humidity limitations.

9. 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, down stream of moisture and oil separators. The air supply is directed at the Blotter for approx. (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.

6.0 COATING MATERIAL AND QUALITY

1. The coating and coating products used to complete the project shall be as specified in the Bid Item Descriptions or an approved equal. The products of other manufacturers 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 Minnesota 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.
2. 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.
3. 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.

4. 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.
5. 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 State of Minnesota Department of Health.
6. 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.

7.0 SURFACE COATING AND MATERIALS

7.1 Interior Wet Coating - Bid Item #3, Schedule 1.0

The tank interior area shall be coated with products manufactured by Tnemec Company, Inc. or approved equal as outlined below to a holiday free surface.

1. Tnemec Company, Inc.

Tnemec Zinc Rich Urethane and Epoxy coating.

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.

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.

Finish: Tnemec Pota-Pox Plus Series N140, 4.0 – 6.0 mils dry film thickness.

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.

7.2 Interior Dry Coating - Bid Item #4, Schedule 1.0

The tank interior area shall be spot repaired with products manufactured by Tnemec Company, Inc. or approved equal as outlined below to a holiday free surface.

1. Tnemec Company, Inc.

Tnemec Zinc Rich Urethane and Epoxy coating.

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.

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.

Finish: Tnemec Pota-Pox Plus Series N140, 4.0 – 6.0 mils dry film thickness.

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.

7.3 Exterior Coating - Bid Item #5, Schedule 1.0

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

1. Tnemec Company, Inc.

Tnemec Company Zinc Rich Urethane, Epoxy, Urethane, and Fluoropolymer coating system.

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.

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.

Intermediate 2: Tnemec Endurashield II Series 73, 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.

Finish – Tnemec HydroFlon Series 701, 2.0-3.0 mils DFT.

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.

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.

7.4 Non-skid walkway - Bid Item #5, Schedule 1.0

1. The non-skid walkway shall consist of one (1) additional coat of epoxy coating at 4.0 - 6.0 mils wet applied between the second intermediate coat and the finish coat as specified in Section 7. While the epoxy coating is still wet, broad cast clean dry 40 mesh Silica sand over the wet primer to saturation. When the non-skid walkway is dry, remove excessive sand. Finish coat per Section 7 above.

7.5 Tank Lettering and Logo - Bid Item #5, Schedule 1.0

1. The Contractor shall paint the new Lettering and logo at the designated lettering locations using 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 and logo(s) color shall be selected by the Owner from coating manufacturer's standard color charts. The Lettering and Logo details are shown in Appendix E.

7.6 Epoxy or Urethane Caulk - Bid Item #1, Schedule 1.0

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.

1. Tnemec Co.

Tnemec Surfacing Epoxy Series 215

2. Sika Corporation.

Sika Elastomeric Sealant, moisture-cured, 1-component non-sag Sikaflex® - 1A.

7.7 Gasket Material - Bid Item #1, Schedule 1.0

1. For manways that use a flat style gasket, the gasket is 1/4 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 3/4 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., Mpls., 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.

7.8 Areas to Protect - Bid Item #2, 3, 4, and 5, Schedule 1.0

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. Reinstall 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.

7.9 (FOR MIXER) Electrical – Bid Item #8, Schedule 1.0

1. General Description of Electrical Work:
 - a. Separate conduit, switch and fittings for Mixer
2. 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 Minnesota 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, workmanlike 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.
3. 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 install 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.
4. 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 "Ligutite" 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.

5. Wiring Devices and Switches. This section includes wiring devices and switches. All wiring devices shall be approved by OSHA, NEMA and the State Building Code. Wiring devices shall be brown in color. Switches shall be heavy duty specification grade, quite, toggle type, side and back wired, rated 20 amperes under all loads, 120-277 volts; Eagle 2221 Series, Hubbel 1220 Series, Leviton 1200 Series, Pass & Seymour 20AC, or approved equal. Switches shall be surface mounted in FS or FD cast device boxes, and shall have a gasketed, cast plate; Appleton FSK-1TSG-C, Crouse Hinds Feraloy, DS32G, or approved equal. Switches shall have weatherproof gray cast aluminum lift cover plates, Hubbel 7420 or approved equal. Switches shall be mounted 4 feet above grade or floor level unless otherwise directed by the Engineer.

8.0 REPAIR WORK

- 8.1 Areas to be repaired are described in the Bid Item Descriptions.
- 8.2 All repairs by welding shall be ground smooth or radiused in conformance with the requirements of Appendix C 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 welders' 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".

8.3 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.

8.4 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 KLM Drawings. However, the CONTRACTOR must submit all shop drawings to the ENGINEER for approval.
5. Certification and Tests:

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.

6. 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.

9.0 HEALTH AND SANITARY FACILITIES

9.1 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 similar to

such as is available from Satellite Service Company. Said privy shall be satisfactorily serviced and kept in a sanitary condition at all times.

- 9.2 No one, the CONTRACTOR, CONTRACTOR'S employees or anyone under CONTRACTOR'S control, shall work in the tank if 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.

10.0 CLEAN UP AND STERILIZATION

- 10.1 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.
- 10.2 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.
- 10.3 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.
- 10.4 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 Minnesota State Regulations. **IN ADDITION THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL HIS TCLP SAMPLING PLAN.** The Sampling Plan and quality control measures must be in conformance with EPA Test Procedure Manual SW-846 and current State of Minnesota, 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.
- 10.5 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.**
- 10.6 **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.**
- 10.7 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.**
- 10.8 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 as described in 1.10 Mobilization.

11.0 VENTILATION AND SAFETY REQUIREMENTS

- 11.1 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 Minnesota Department of Labor and Industry for Confined Spaces Entry.
- 11.2 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.
- 11.3 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 workmen or the work.
- 11.4 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 coatings manufacturer, and shall be thoroughly cleaned before and after use with the appropriate cleaning solvents.
- 11.5 Provide adequate explosion-proof lighting during all surface preparation and coating operations. This lighting shall be sufficient to illuminate clearly the working area without shadows.
- 11.6 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.
- 11.7 Prior to use, store all coating materials in a secure area that shall provide protection from weather and temperature, below 60 degrees F. The area shall be maintained in a safe, neat, and clean manner and free from fire, explosion or other hazards.
- 11.8 All work shall be performed in a safe and orderly manner, all in compliance with the standards as prescribed by OSHA and the Minnesota 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 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.** Management and supervisory personnel shall be responsible for employee training and compliance with this policy.

- 11.9 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 2 square inch mesh openings to allow adequate air passage.

12.0 SUPERINTENDENT

- 12.1 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.
- 12.2 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. If the workers speak a language other than English, the Contractor's superintendent shall be bilingual in the language of the workers and English so that the contract requirements can be communicated to the workers.
- 12.3 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. Refer to paragraphs 10.0 Quality Assurance and 11.0 Rejected Work and Materials of the Project Requirements (Green) Section.
- 12.4 The contractor shall be responsible to perform initial testing to the interior wet coating below the HWL to ensure a holiday free surface.

13.0 INSPECTION OF WORK

- 13.1 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.
- 13.2 The ENGINEER reserves the right to inspect the Work at any time for compliance with all requirements of the specifications.
- 13.3 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.
- 13.4 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.
- 13.5 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 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.
- 13.6 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 percent of the specified minimum thickness.
- 13.7 The CONTRACTOR shall provide all necessary inspection equipment (at the discretion of the ENGINEER), labor, rigging, lighting and other equipment to facilitate this inspection.
- 13.8 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.**
- 13.9 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.

14.0 STERILIZATION OF TANK

- 14.1 Upon completion of the coating and confirmation that the coating has been properly cured, the inside of the tank shall be thoroughly cleaned in accordance with Section 10.0 and disinfected by the use of chlorine applied in a concentrated solution, sprayed over the entire surface in accordance with the specifications of the Minnesota Health Department, and AWWA C652-11, section 4.3: Chlorination Method 2.
- 14.2 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.
- 14.3 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.
- 14.4 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.

15.0 CONTAINMENT PLAN

- 15.1 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.
- 15.2 The containment plan must be in conformance with Minnesota Pollution Control Agency regulations and this specification. Included in the Containment Plan submittal are the Contractors calculations of Risk Factor per MN PCA regulation section 7025.0310, temporary site fence, project site notification sign, and engineering controls for the reduction, removal and control of dust, for compliance with worker health and environmental regulations.
- 15.3 **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.

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These Supplemental Conditions amend or supplement the General Conditions and other provisions of the Specifications and Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

1.0 Scope

- 1.1 **Regulatory Requirements** This specification covers the requirements for worker protection, environmental protection, and the handling of debris generated from industrial lead paint removal.
- a. It is consistent with the intent of these contract documents to describe those performance standards, often broad and general in nature, required to provide a complete and operating system. It shall be the responsibility of the **CONTRACTOR** to familiarize himself fully regarding the detailed needs and requirements of any and all regulatory agencies having jurisdiction over this work. These detailed needs and requirements shall be accommodated, as part of the Work, in every manner just as if they were prescribed in these Contract Documents and Specifications.
 - b. The **CONTRACTOR** shall comply with and have documented Confined Entry Space Procedures available at the tank sites at all times as required by OSHA 29 CFR 1910.146. The **CONTRACTOR** shall also comply with any state and/or local requirements which are more restrictive than the federal requirements.
 - c. The **CONTRACTOR** shall comply with safe working practices for cleaning, burning, welding, and handling lead-based and non-lead-based coated steel, and all health and safety regulations and requirements of Federal OSHA 29 CFR 1926.62, Interim Final Rule on Lead in Construction, state and local health regulatory agencies, and any Material Safety Data Sheets (MSDS). This compliance shall be accomplished without supervision from the Engineer, or other direct or indirect agents of the Engineer. All rigging attachments present on the tanks shall be carefully inspected by the **CONTRACTOR** immediately prior to use. The **CONTRACTOR** assumes all responsibility for use of any existing or added attachments.
 - d. The **CONTRACTOR** shall institute a medical surveillance program in complete accordance with OSHA 29 CFR 1926.62, Interim Final Rule on Lead in Construction or more restrictive regulations. As part of program, the **CONTRACTOR** shall make available biological monitoring in the form of blood sampling and analysis for lead. The **CONTRACTOR** shall furnish certification to the Engineer to document its compliance with the medical surveillance program requirement. The costs of biological monitoring shall be paid for by the **CONTRACTOR**.

- e. Compliance with local, state and federal regulations concerning emissions or disposal of solid, particulate, liquid, or gaseous matter as a result of the reconditioning, or other operations under this Agreement shall be the responsibility of the **CONTRACTOR**. This compliance shall be accomplished without supervision from the Engineer. No additional compensations for changes in the laws, regulations, or the interpretation thereof shall be granted by the Engineer. No burning of trash on the site shall be permitted. Any fines imposed on the Engineer by any regulatory agency as a result of the **CONTRACTOR'S NONCOMPLIANCE WITH ENVIRONMENTAL REGULATIONS SHALL BE PAID OR REIMBURSED BY THE CONTRACTOR.**

1.2 **Requirements.** Provide required personnel, equipment, and materials, to recondition the tank and perform the project according to applicable codes and standards.

2.0 Reference Documents. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

2.1 **Code of Federal Regulations.**

29 CFR 1910	“Occupational Safety and Health Standards” (General Industry Standards)
29 CFR 1910.20	“Access to Employee Exposure and Medical Records”
29 CFR 1910.1025	“Lead”
29 CFR 1910.137	“Respiratory Protection”
29 CFR 1910.146	“Permit Required Confined Space”
29 CFR 1910.1025	“Occupational Exposure to lead in General Industry Standard”
29 CFR 1910.1200	“Hazard Communication”
29 CFR 1926	“Safety and Health Regulations for Construction” (Construction Industry Standards)
29 CFR 1926.20	“Construction Industry, General Safety and Health”
29 CFR 1926.21	“Safety Training”
29 CFR 1926.28	“Personal Protective Equipment”
29 CFR 1926.51	“Sanitation”

29 CFR 1926.55	“Gases, Vapors, Fumes, Dusts and Mists”
29 CFR 1926.57	“Ventilation”
29 CFR 1926.59	“Hazard Communications”
29 CFR 1926.62	“Lead Exposure in Construction Compliance Program”
29 CFR 1926.103	“Respiratory Protection”
29 CFR 1926.200	“Accident Prevention Signs and Tags”
29 CFR 1926.353	“Ventilation and Protection in Welding, Cutting and Heating”
29 CFR 1926.354	“Welding, Cutting and Heating in Way of Preservative Coatings”
40 CFR 50	“National Primary and Secondary Ambient Air Quality Standards”
40 CFR 50.6	“Air Quality Standards for Particulate Matter”
40 CFR 60	“Standards of Performance for New Stationary Sources, Appendix A, Test Methods”
40 CFR 117	“Determination of Reportable Quantities for Hazardous Substances”
40 CFR 122	“EPA Administered Permit Program: The National Pollutant Discharge Elimination System”
40 CFR 261	“Identification and Listing of Hazardous Waste”
40 CFR 262	“Standards Applicable to Generators of Hazardous Waste”
40 CFR 263	“Standards Applicable to Transporters of Hazardous Waste”
40 CFR 264	“Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities”
40 CFR 265	“Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities”
40 CFR 268	“Land Disposal Restrictions”
40 CFR 300	“National Oil and Hazardous Substances Pollution Contingency Plan”
40 CFR 302	“Designation, Reportable Quantities and Notification”

- 2.2 **National Institute for Occupational Safety and Health**
NIOSH Method 7082, “Lead”
- 2.3 **American Society for Testing and Materials**
ASTM D-3335, “Test Method for Low Concentrations for Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy”
- 2.4 **Environmental Protection Agency (EPA) Publications**
SW-846, “Test Methods for Evaluating Solid Waste-Physical/Chemical Methods”
EPA Method 1311, “Toxicity Characteristics Leaching Procedure”
- 2.5 **The Society for Protective Coatings (SSPC)**
SSPC-Guide 61(CON) “Guide for Containing Debris Generated During Paint Removal Operations”
SSPC-Guide 71(DIS) “Guide for the Disposal of Lead-Contaminated Surface Preparation Debris”
- 2.6 **Corps of Engineers (COE)**
COE EP-1165-2-304 “1976 Flood Plain Regulations for Flood Plain Management”
- 2.7 **Minnesota Pollution Control Agency**
Removal of Lead from Steel Structures - Chapter 7025 of MN State Statutes.
- 3.0 **Applicable Codes and Standards** As a minimum standard of quality and workmanship, Reconditioning Work is to comply with the latest edition of the following codes and standards insofar as they are applicable:
- American Water Works Association (AWWA) Standards
 - American Welding Society (AWS) Standards
 - American Petroleum Institute (API) Standards
 - American Institute of Steel Construction (AISC)
 - ASTM International Standards
 - Occupational Safety and Health Administration (OSHA) Standards

American National Standards Institute (ANSI) Standards

United State Environmental Protection Agency (USEPA)

United States Resource Conservation and Recovery Act (US RCRA)

Minnesota Pollution Control Agency (MPCA)

National Electric Code (NEC)

NACE International

Underwriter's Laboratories (UL)

Resource Conservation and Recovery Act (RCRA)

Building Official and Code Administrators (BOCA)

American Society of Civil Engineers (ASCE)

The above codes and standards are hereinafter referred to as "Reference specifications."

4.0 Execution

4.1 Procedures

- a **CONTRACTOR** shall comply with all regulations and requirements listed or inferred by this Section. The **CONTRACTOR** will obtain a "No Cost" **Building/Construction permit** from the Owner. The **CONTRACTOR** shall pay all other fees, obtain all other necessary permits may be required for the prosecution of his work as called out in the Specifications.

- 5.0 Definitions** Lead-Containing Paint: A paint is classified as lead-containing if it contains 0.5 percent or 5,000 PPM lead or greater. This can be determined from prior knowledge of the coating (certification from the coating manufacturer) or through laboratory testing in accordance with ASTM D-3335.

Hazardous Waste: Paint debris is classified as hazardous due to the characteristic of toxicity, if after testing by Toxicity Characteristic Leaching Procedure (TCLP), the leachate contains any of the elements in the concentrations listed below (or greater):

Arsenic	5.0 mg/1
Barium	100.0 mg/1
Cadmium	1.0 mg/1
Chromium	5.0 mg/1
Lead	5.0 mg/1
Mercury	0.2 mg/1
Selenium	1.0 mg/1
Silver	5.0 mg/1

Other elements and characteristics can cause a material to be hazardous as defined in 40 CFR 261 and must be considered.

Sediment: Soil and other debris that have eroded and have been transported by runoff water or wind.

Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.

Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass, crockery, Metal, lumber, cans, and bones.

Debris: Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

Chemical Wastes: This includes salts, acids, alkalis, herbicides, pesticides, organic chemicals, and spent products which serve no purpose.

Sanitary Waste: Sewage Wastes characterized as domestic sanitary sewage. Garbage Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

Oily Waste Petroleum products and bituminous materials.

- 6.0 Protection of Natural resources** Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.
- 6.1 **Temporary Construction** Remove traces of temporary construction facilities such as work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other signs of construction. Grade temporary roads, parking areas, and similar temporarily used areas to conform with surrounding contours.
- 6.2 **Water Resources** Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.
- 6.3 **Control and Disposal of Solid and Sanitary Wastes** Pick up solid wastes, and place in containers which are regularly emptied. Do not prepare, cook, or dispose of food on the project site. Prevent contamination of the site of other areas when handling and disposing of wastes. On completion, leave the areas clean. Control and dispose of waste.

- 6.4 **Disposal of Rubbish and Debris** Dispose of rubbish and debris in accordance with the requirements specified.
- 6.5 **Garbage Disposal** Place garbage in approved containers, and move to a pickup point or disposal area, where directed.
- 7.0 Dust Control** Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. All in compliance with MPCA rules for control of fugitive particulate matter.
- 8.0 Criteria for controls over Worker Protection**
- 8.1 OSHA requirements for the protection of workers shall be in accordance with 29 CFR 1926.62 Lead.
- 8.2 A written program addressing compliance with each of the items below shall be provided, Analysis of air monitoring filters shall be performed by an AIHA accredited laboratory. Blood lead testing shall be conducted by an OSHA approved laboratory. Note also that the requirements listed below are in addition to other OSHA hazard communication and safety and health requirements of the project.
- 8.2.1 Action level
- 8.2.2 Permissible exposure limit (PEL)
- 8.2.3. Exposure assessment (monitoring)
- 8.2.4 Compliance plan
- 8.2.5 Respiratory protection
- 8.2.7 Housekeeping
- 8.2.8 Hygienic facilities and practices
- 8.2.9 Medical surveillance
- 8.2.10 Medical removal protection
- 8.2.11 Employee information and training
- 8.2.12 Signs
- 8.2.13 Record keeping
- 8.2.14 Observation of monitoring

- 8.3 Personnel medical test results: The results of all medical tests pertaining to this project shall be furnished to the Owner.

9.0 Criteria for handling of Hazardous Waste and Reporting Releases

- 9.1 The Owner is considered to be the generator of all hazardous waste for this project. The Contractor is responsible for all costs associated with disposing of all hazardous waste.
- 9.2 Sampling and Test of Debris:
- a. Representative samples of the debris shall be selected in accordance with the requirements of SW-846, and tested by TCLP in accordance with Appendix 11 of CFR 261. A minimum of four (4) samples per waste stream shall be taken. The contractor is responsible for all sampling and testing. The name and qualifications of the sampling and testing firms shall be provided to the Owner at least 30 days after work is completed. Results of testing will be provided to the Owner immediately upon receipt.
- 9.3 Hazardous Waste: If the test of the debris in Section 9.1 show the waste to be hazardous, the following requirements shall apply.
- 9.3.1 Site Storage and Handling.
- a. The contractor shall pay strict attention to the requirement of 40 CFR 262 and 40 CFR 265 for the on-site handling of debris.
- b. Special attention shall be given to the time of storage, amount of material stored at any one time, use of proper containers, personnel training and confirmation that as EPA identification number will be obtained.
- c. Paint debris shall not be placed on the unprotected ground and shall be shielded to prevent dispersion of the debris by wind or rain water.
- d. The contractor shall provide preparedness, prevention, and contingency plans (PCP) in accordance with 40 CFR 265 Sub part C and Sub part D for the steps to be taken in the event of an unplanned release or emergency.
- e. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective actions are taken.
- 9.3.2 Transportation and Disposal of Debris:
- a. The contractor shall arrange to have the debris transported from the site in accordance with the requirements of 40 CFR 263, and disposed of properly in accordance with 40 CFR 264 and 40 CFR 268 including the necessary notifications and certifications with shipments.
- b. Only licensed Transporters and disposal facilities shall be used.

- c. Signed manifests shall be returned to the Owner to verify that all steps of the handling and disposal process have been completed properly.
- 9.4 Clearance Testing: The contractor shall thoroughly vacuum, wash, or otherwise decontaminate reusable items prior to removal from the project site. Items include, but are not limited to, equipment, containment materials, ground covers, scaffolding, and change and shower facilities. If adequate cleaning is not possible, the materials shall be treated as waste and tested and disposed of properly, at the contractor expense.
- 9.5 Reportable Releases: All reportable releases shall be reported to the appropriate authorities and the Owner.
 - 9.5.1 CERCLA Release: The Contractor is advised that the discharge of one or more pounds of lead waste or dust into the atmosphere, water or soil within a 24 hour period is considered a reportable release in accordance with 40 CFR 300 and 40 CFR 302.
 - 9.5.2 Other Releases: Any release that is in violation of any Federal, State, or local regulation that is to be reported, shall be so reported in accordance the proper regulation. Also, the Contractor shall notify immediately the Owner.

10.0 Contractor's Written Programs The contractor shall provide detailed written programs for each of the items below a minimum of 30 days prior to beginning work. A detailed outline of all programs requiring a submittal will be submitted with bid. Only the successful bidder will be required to submit completed programs. All programs and outlines submitted shall be a minimum of four (4) copies.

- 10.1 Collection of Debris Plan: The contractor shall provide detailed written plan for the methods to be employed for the collection of debris.
- 10.2 Programs for the Protection of the Ambient air, soil, and water:
 - The contractor shall submit the following testing and evaluation programs that will be used to confirm that the work does not violate Federal, State, and local regulations.
 - 10.2.1 Ambient Air Quality: The contractor shall submit a written program for air monitoring at the project site to confirm that fugitive dust emissions do not exceed the specified criteria.
 - 10.3 Worker Protection Program: The contractor shall submit a worker protection program in accordance with 29 CFR 1926.62 as required in paragraph 6.0, including the certified laboratories that will be used for the analysis.

- 10.4 Handling, Disposal, and Analysis of Debris: The contractor shall provide the following:
- 10.4.1 Sampling and Testing of Debris: Written procedures that will be followed for the sampling and testing of debris to determine if it is hazardous waste. Debris includes, but is not limited to paints, spent abrasives, stripper solutions.
- 10.4.2 Handling and Site Storage: A written plan that addresses the handling and site storage of lead-containing debris in accordance with the requirements of 40 CFR 262 and 40 CFR 265. The contractor shall confirm that an EPA identification number will be obtained, that proper manifesting of the waste will be addressed, and that all site storage limitations, including the time of storage, container requirements, contingency plan, and personnel training will be observed.
- 10.4.3 Transportation: Written confirmation that proper transportation of the debris will be accomplished in accordance with the requirements of 40 CFR 263, including the name of the licensed Transporters.
- 10.4.4 Disposal: Written confirmation that the debris will be treated and disposed of in accordance with the requirements of 40 CFR 2674 and 40 CFR 268. The program shall provide assurance that the debris is handled properly from cradle to grave, provide the name of the licensed disposal facility, and include a schedule for the submittal of the completed manifests to the owner.
- 10.5 Clearance Testing: The contractor shall provide written programs for the decontamination of reusable items prior to removal from the project site, or for the proper testing and disposal of the materials if decontamination is not possible or desirable.
- 10.6 Reportable releases.
- 10.6.1 CERCLA Release: The Contractor shall submit a plan for reportable release in accordance with 40 CFR 300 and 40 CFR 302.
- 10.7 Safety and Health Protection: The contractor shall submit a written program for safety and health protection plan based on the applicable requirements of 29 CFR 1926, 29 CFR 1910, OSHA, and NIOSH lead in construction guidelines. This program shall include, at a minimum:
- a. Defined responsibilities for the person who shall document worker training in industrial hygiene and safety.
 - b. Evidence that the program has been reviewed by an industrial hygiene and safety professional.
 - c. Provisions of exposure monitoring

- d. Details of hazardous materials compliance plans, including provisions for:
 1. Protective clothing
 2. Housekeeping Activities
 3. Hygiene
 4. Medical Surveillance
 5. Training
 6. Record Keeping
- 10.8 Worker and Environmental Protection: The contractor shall submit a written program for worker and environmental protection plan for hazardous materials.
1. Environmental protection plan.
 2. Hazardous waste material's management and disposal plan.
- 10.9 Monitoring: The contractor shall submit a written procedure specifying monitoring criteria and a resulting action plan for workers.
- 10.10 Decontamination: The contractor shall submit a written decontamination plan for workers and equipment. This plan shall include, at a minimum:
- a. Placement of protocol vestibules and equipment needed within the vestibule, such as vacuums, negative air, and showers.
 - b. Hygiene facility that is necessary to decontaminate lead-exposed workers, equipment and clothing.
 - c. Establish an appropriate method of decontamination.
 - d. Establish procedures to prevent contamination of clean areas.
 - e. Establish emergency response procedures for accidents and/or spills.
 - f. Establish methods to minimize direct worker contact with contaminants during removal of personal protective clothing and equipment.
 - g. Establish procedures for disposing of contaminated clothing and related equipment that cannot be completely decontaminated.

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GENERAL CONDITIONS

GC-1. CONTRACT DOCUMENTS. It is understood and agreed that the Advertisement for Bids, Instruction to Bidders, Proposal, Contract Agreement, Performance Bond, General Conditions, Special Conditions, Specifications, Drawings and Addenda issued by the Engineer. Supplemental Agreements, specifications and engineering data furnished to the Contractor and approved by the Owner, are each included in this contract and the work shall be done in accordance therewith.

GC-2. DEFINITIONS. Words, phrases, or other expressions used in these contract documents shall have meanings as follows.

1. "Contract" or "contract documents" shall include the items enumerated above under CONTRACT DOCUMENTS.
2. "Owner" shall mean the City of Otsego, Minnesota, named and designated in the Contract Agreement as "Party of the First Part", acting through its Mayor and City Council and their duly authorized agents. All notices, letters, and other communications directed to the Owner shall be addressed and delivered to the City of Otsego, Minnesota.
3. "Contractor" shall mean the corporation, company, partnership, firm, or individual named and designated in the Contract Agreement as the "Party of the Second Part", who has entered into this contract for the performance of the work covered thereby, and its, his or their duly authorized representatives.
4. "Subcontractor" shall mean and refer only to a corporation, partnership, or individual having a direct contract with the Contractor for performing work at the job site.
5. "Engineer" shall mean KLM ENGINEERING or engineer designated, appointed, or otherwise employed or delegated by the Owner, or their duly authorized agents, such agents acting within the scope of the particular duties entrusted to them in each case.
6. "Inspector" shall mean KLM ENGINEERING or inspector designated, appointed, or otherwise employed or delegated by the Owner, or their duly authorized agents, such agents acting within the scope of the particular duties entrusted to them in each case.
7. "Date of contract", or equivalent words, shall mean the date written in the first paragraph of the Contract Agreement.
8. "Day" or "days" unless herein otherwise expressly defined, shall mean a calendar day or days of twenty-four hours each.

9. “The work” shall mean the equipment, supplies, materials, labor, and services to be furnished under the contract and the carrying out of all obligations imposed by the contract documents.

10. “Plans” or “drawings” shall mean all (a) drawings furnished by the Owner as a basis for Proposals, (b) supplementary drawings furnished by the Owner to clarify and to define in greater detail the intent of the contract plans and specifications, (c) drawings submitted by the successful bidder with his Proposal and by the Contractor to the Owner, as approved by the Engineer, and (d) drawings submitted by the Owner to the Contractor during the progress of the work as provided for herein.

11. Whenever in these contract documents the words “as ordered”, “as directed”, “as required”, “as permitted”, “as allowed”, or words or phrases of like import are used, it shall be understood that the order, direction, requirement, permission, or allowance of the Owner or Engineer is intended only to the extent of judging compliance with the terms of the contract; none of these terms shall imply the Owner or the Engineer has any authority or responsibility for supervision of the Contractor’s forces or construction operations, such supervision and the sole responsibility thereof being strictly reserved for the Contractor.

12. Similarly the words “approved”, “reasonable”, “suitable”, “acceptable”, “proper”, “satisfactory”, or words of like effect and import, unless otherwise particularly specified herein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the Owner or Engineer, to the extent provided in “11.” above.

13. Whenever in these contract documents the expression “it is understood and agreed” or an expression of like import is used, such expression means the mutual understanding and agreement of the parties executing the Contract Agreement.

GC-3. VERBAL STATEMENT NOT BINDING. It is understood and agreed that the written terms and provisions of this agreement shall supersede all verbal statements of representatives of the Owner. Verbal statements modifying this agreement shall not be effective or be construed as being a part of this contract.

GC-4. STANDARD SPECIFICATION. Reference to standard specifications of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative specification adopted and published at the date of taking bids, unless specifically stated otherwise.

GC-5. EXECUTION OF CONTRACT DOCUMENTS. The Engineer will prepare four (4) copies of the contract documents. All copies will be submitted to the Contractor and the Contractor shall execute the Contract Agreement, insert executed copies of the required bonds and power of attorney, and submit all copies to the Owner. The date of contract on the contract agreement and bond forms shall be left blank for filling in by the Owner. The certification date on the power of attorney document shall be also left blank for filling in by the Owner.

The Owner will execute all copies, insert the date of contract on the bonds and power of attorney, retain one copy, and forward one copy each to the Contractor, Engineer, and Surety Company.

GC-6. SCOPE, NATURE, AND INTENT OF SPECIFICATIONS AND PLANS. The specifications and plans are intended to supplement but not necessarily duplicate each other. Any work exhibited in the one and not in the other shall be executed as if it has been set forth in both, so that the work will be constructed according to the complete design as determined by the Engineer.

Should anything necessary for a clear understanding of the work be omitted from the specifications and plans, or should the requirements appear to be in conflict, the Contractor shall secure written clarification

from the Engineer before proceeding with the work affected thereby. It is understood and agreed that the work shall be performed according to the true intent of the contract documents.

When equipment or materials furnished by the Contractor cannot be installed as specified or as shown in the plans, the Contractor shall, without extra cost to the Owner, make all modifications required to properly install the equipment or material. Such modifications shall be subject to the approval of the Owner and the Engineer.

GC-7. FIGURED DIMENSIONS TO GOVERN. Dimensions and elevations shown on the plans shall be accurately followed even though they differ from scaled measurements. No work shown on the plans, the dimensions of which are not indicated, shall be executed until necessary dimensions have been obtained from the Engineer.

GC-8. CONTRACTOR TO CHECK PLANS AND SCHEDULES. The Contractor shall check all dimensions, elevations, and quantities shown on the plans and schedules given to him by the Engineer, and shall notify the Engineer of any discrepancy between the plans and the conditions on the ground, or any error or omission in plans, or in the layout as given by stakes, points, or instructions, which he may discover in the course of the work. The Contractor will not be allowed to take advantage of any error or omission in the plans or contract documents. Full instructions will be furnished by the Engineer should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

GC-9. APPROVAL OF ENGINEERING DATA. Engineering data covering all equipment and fabricated material to be furnished under this contract shall be submitted to the Engineer for approval. This data shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement, and operation of component materials and devices; the external connections, anchorage's, and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment. Data submitted shall include drawings showing essential details of any changes by the Contractor and all required wiring and piping layouts.

No work shall be performed in connection with the fabrication or manufacture of material and equipment, nor shall any accessory or appurtenance be purchased until the drawings and data thereof have been approved, except at the Contractor's own risk and responsibility. Five (5) copies of each drawing and necessary data shall be submitted to the Engineer. Each drawing or data sheet shall be clearly marked with the name of the project, the Contractor's name, and references to applicable specification paragraphs and plan sheets.

When the drawings and data are returned marked APPROVED or RECEIVED FOR DISTRIBUTION not less than two (2) additional copies shall be furnished.

Unless otherwise directed by the Engineer, when the drawings and data are returned marked APPROVED AS NOTED the changes shall be made as noted thereon and not less than five (5) corrected copies shall be furnished.

When the drawings and data are returned marked RETURNED FOR CORRECTION the correction shall be made as noted thereon and as instructed by the Engineer and not less than three (3) corrected copies resubmitted. Not less than two (2) additional copies of all such drawings and data shall be furnished after approval.

The ENGINEER'S review of drawings and data submitted by the Contractor will cover only general conformity to the plans and specifications, external conditions, and dimensions which affect the plans and layout. The ENGINEER'S approval of drawings returned marked APPROVED or APPROVED AS NOTED will not constitute a blanket approval of all dimensions, quantities, and details of the material, equipment, device, or item shown and does not relieve the Contractor from any responsibility for error or deviations from the contract requirements.

All drawings and data, after final processing by the Engineer, shall become a part of the contract documents and the work shown or described thereby shall be performed in conformity there with unless otherwise required by the Owner or the Engineer.

GC-10. PRESERVATION OF MONUMENTS AND STAKES. The Contractor shall carefully preserve all monuments, benchmarks, reference points, and stakes. In case of his destruction thereof, the Contractor will be charged with the expense of replacement and shall be responsible for any mistake or loss of time that may be caused. Permanent monuments or benchmarks which must be removed or disturbed shall be protected until they can be properly referenced for relocation. The Contractor shall furnish materials and assistance for the proper replacement of such monuments or benchmarks.

GC-11. LEGAL ADDRESSES. Both the business address of the Contractor given in the proposal and the Contractor's office in the vicinity of the work are hereby designated as the places to which all notices, letters, and other communication to the Contractor will be mailed or delivered. The address of the Owner appearing in Section GC-2.2 is hereby designated as the place to which all notices, letters, and other communication to the Owner shall be mailed or delivered. Either party may change his address at any time by a written notice delivered to the Engineer and to the other party.

GC-12. CONTRACTOR'S OFFICE AT SITE OF WORK. During the performance of this contract, the Contractor shall maintain a suitable office at or near the site of the work that shall be the headquarters of a representative authorized to receive drawings, instructions, or other communication or articles. Any communication given to the said representative or delivered at the Contractor's office at the site of the work in his absence shall be deemed to have been delivered to the Contractor.

Copies of the plans, specifications, and other contract documents shall be kept at the Contractor's office at the site of the work available for use at all times.

GC-13. PATENTS. Royalties and fees for patents covering materials, articles, apparatus, devices, or equipment (as distinguished from processes) used in the work shall be included in the contract amount. The Contractor shall satisfy all demands that may be made at any time for such royalties or fees and he shall be liable for any damages or claims for patent infringements. The Contractor shall, at his own cost and expense, defend all suits or proceedings that may be instituted against the Owner for infringements or alleged infringement of any patents involved in the work and, in the case of an award of damages, the Contractor shall pay such award. Final payment to the Contractor by the Owner will not be made while any suit or claim remains unsettled. The Contractor, however, will not be held liable for the defense of any suit or other proceeding nor for the payment of any damages or other costs for the infringement of any patented process required by the contract documents; except if the Contractor has information that the process so required in an infringement of a patent, the Contractor shall be liable for any damages or claims in connection therewith unless he promptly notifies the Owner and Engineer of such infringement.

GC-14. INDEPENDENT CONTRACTOR. The relation of the Contractor to the Owner shall be that of an independent contractor.

GC-15. RELATIONS WITH OTHER CONTRACTORS. The Contractor shall cooperate with all other contractors who may be performing work in behalf of the Owner and workmen who may be employed by the Owner on any work in the vicinity of the work to be done under this contract, and he shall so conduct his operations as to interfere to the least possible extent with the work of such contractors or workmen. He shall promptly make good, at his own expense, any injury or damage that may be sustained by other contractors or employees of the Owner at his hands. Any difference or conflict that may arise between the Contractor and other contractors or between the Contractor and workmen of the Owner in regard to their work shall be adjusted and determined by the Engineer. If the work of the Contractor is delayed because of any acts or omissions of any other Contractor, the Contractor shall have no claim against the Owner on that account other than an extension of time.

Whenever there is interference with work under other contracts, the Engineer shall decide the manner in which the work shall proceed under each contract.

GC-16. METHODS OF OPERATION. The contractor shall inform the Engineer in advance concerning his plans for carrying on each part of the work. If at any time the Contractor's plans or equipment or his methods of executing the work appear to the Engineer to be inadequate to insure the required safety, quality, or rate of progress of the work, the Engineer may order the Contractor to increase

or improve his facilities or methods and the Contractor shall comply with such orders; but neither compliance with such orders nor failure of the Engineer to issue such orders shall relieve the Contractor from his obligation to secure the degree of safety, the quality of work, and the rate of progress required by this contract. The Contractor shall be responsible for the safety, adequacy, and efficiency of his plans, equipment, and methods.

Any method of work suggested by the Owner or Engineer, but not specified, shall be used at the risk and responsibility of the Contractor. The Engineer and Owner will assume no responsibility thereof.

Approval by the Owner or Engineer of any plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility thereof, and such approval shall not be considered as an assumption of any risk or liability by the Owner or Engineer, or any officer, agent, or employee thereof. The Contractor shall have no claim on account of the failure or inefficiency of any plan or method so approved.

GC-17. AUTHORITY OF THE ENGINEER. To prevent delays and disputes, and to discourage litigation, the parties to this contract agree that the Engineer shall determine the quantities of work, which are to be paid for under the contract and shall determine all questions in relation to the work.

If in the opinion of the Contractor a decision made by the Engineer is not in accordance with the meaning and intent of the contract, the Contractor may file with the Engineer and the Owner, within thirty (30) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered acceptance of the ENGINEER'S decision and the decision shall become final and conclusive.

The ENGINEER'S decision and the timely filing of the Contractor's written objection thereto shall be a condition precedent to the Contractor filing suit.

It is the intent of this agreement that there shall be no delay in the execution of the work and the decision of the Engineer as rendered shall be promptly observed.

Notwithstanding the foregoing, no changes to the contract sum or the contract time shall be effective without the approval of the City Council.

GC-18. ENGINEERING INSPECTION. The Owner may appoint (either directly or through the Engineer) such inspectors, as he deems proper to inspect the materials furnished and the work performed for compliance with the plans and specifications. The Contractor shall furnish all reasonable assistance required by the Engineer, or inspectors, for the proper inspection of work.

The Contractor shall obey the verbal directions and instructions of the Engineer or inspector when they are consistent with the obligations of this contract. Should the Contractor object to any order given by any inspector, the Contractor may make written appeal to the Engineer for his decision.

Inspectors and other authorized representatives of the Owner or Engineer shall be free to perform their duties. Any attempted intimidation of one of them by the Contractor or his employees shall be sufficient reason, if the Owner so decides, to terminate the contract.

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.

The Engineer may make periodic visits to the site to familiarize himself generally with the progress and quality of the work and to determine in general if the work is proceeding in accordance with the Contract Documents. On the basis of his on-site observations as an Engineer, he shall endeavor to guard the Owner against defect and deficiencies in the work of the Contractor. The Engineer shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the work. The Engineer shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety

precautions and programs in connection with the work, and he shall not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

GC-19. NO WAIVER OF RIGHTS. Neither the inspection by the Owner or Engineer or any of their officials, employees, or agents, nor any order by the Owner or Engineer for payment of money, or any payment for, or acceptance of, the whole or any part of the work by the Owner or Engineer, nor any extension of time, nor any possession taken by the Owner or its employees, shall operate as a waiver of any provision of this contract, or of any power herein reserved to the Owner, or any right to damages herein provided, nor shall any waiver of any breach in this contract be held to be a waiver of any other or subsequent breach.

GC-20 SUPERVISION OF WORK. The Contractor shall provide continuous supervision of all operations on the site of the work, either personally or through competent representatives. The representative of the Contractor in charge of the work shall be fully authorized to act for the Contractor and to receive whatever verbal orders may be given for the proper prosecution of the work or written notices in connection therewith.

The Contractor shall be responsible for complete supervision and control of his subcontractors as though they were his own forces. Notice to the Contractor shall be considered notice to any affected subcontractor.

GC-21 PROTECTION OF PROPERTY AND PUBLIC LIABILITY. The Contractor shall be accountable for any damages resulting from his operations. He shall be fully responsible for the protection of all persons including members of the public, employees of the Owner, and employees of other contractors or subcontractors, and all public and private property including structures, vehicles, sewers and utilities, above and below ground.

The Contractor shall furnish and maintain all necessary safety equipment, such as covers, barriers, signs, warning lights, and guards, to provide adequate protection of persons and property. The Contractor shall give reasonable notice to the owners of public or private property and utilities when such property and utilities are liable to injury or damage through the performance of the work and shall make all necessary arrangements with such owners relative to the removal and replacement or protection of such property or utilities.

GC-22. MODIFICATIONS. The Contractor shall modify the work whenever so ordered by the Owner and such modifications shall not affect the validity of the contract. Modifications may involve increases or decreases in the amount of the work for which appropriate contract price adjustment will be made.

Except for minor changes which involve no contract price adjustment or other monetary consideration, and with the exception of adjustments of estimated quantities for unit price work or material to conform to actual pay quantities, all modifications shall be made under the authority of duly executed change orders issued and signed by the Owner and accepted and signed by the Contractor.

GC-22.01 Extra Work. If a modification increases the amount of the work, and the added work or any part thereof is a type and character which can properly and fairly be classified under one or more unit price items of the Proposal, then the added work or part thereof shall be paid for according to the amount actually done and at the applicable unit price or prices. Otherwise, such work shall be paid for as hereinafter provided.

Claims for extra work will not be paid unless the work covered by such claims was authorized in writing in advance by the Owner and the Contractor shall not have the right to prosecute or maintain an action in court to recover for extra work unless his claim is based upon a written order from the Owner. Payments for extra work shall be based on agreed lump sums or on agreed unit prices whenever the Owner and the Contractor agree upon such prices before the extra work is started; otherwise, payments for extra work shall be based on actual field cost plus the specified percentage allowance.

For the purpose of determining whether proposed extra work will be authorized, or for determining the payment method for extra work, the Contractor shall submit to the Engineer, upon request, a detailed cost

estimate for proposed extra work. The estimate shall show itemized quantities and charges for all elements of direct cost.

Charges for the Contractor's and subcontractor's extra profit, extra general supervision, extra field office expense, and extra overheads shall be shown as a percentage addition to the total estimated net cost. Unless otherwise agreed upon by the Contractor and the Owner, such percentage additions shall be fifteen (15) per cent for the extra work performed by the Contractor's own forces or twenty (20) per cent for extra work performed by a subcontractor.

When payment for extra work is based on actual field cost, the Contractor will be paid the actual field cost plus an allowance of fifteen (15) percent if the extra work is performed by the Contractor's own forces or twenty (20) per cent if the extra work is performed by a subcontractor. The allowance will be paid as full compensation for the Contractor's and subcontractor's extra profit, extra general supervision, extra field office expense, extra overheads, and all other elements of extra cost not defined herein as actual field cost.

The actual field cost shall include only those extra costs for labor and material expended in direct performance of the extra work and may include:

- a. The actual payroll cost of all workmen such as laborers, mechanics, craftsmen, and foremen.
- b. The Contractor's or subcontractor's net cost for materials and supplies.
- c. The rental charge for vehicles and construction equipment.
- d. The transportation charges for equipment.
- e. The charges for extra power, fuel, lubricants, water, and special services.
- f. The charges for extra payroll taxes, bond premiums, and insurance premiums.

The form in which actual field cost records are kept, the construction methods, and the type and quality of equipment used shall be subject to the ENGINEER'S approval.

Construction equipment which the Contractor has on the job site and which is of a type and size suitable for use in performing the extra work shall be used. The hourly rental charges for equipment shall not exceed 1/2 of one per cent of the latest applicable Associated Equipment Distributors published monthly rental rates and shall apply to only the actual time the equipment is used in performing the extra work.

When extra work requires the use of equipment that the Contractor does not have on the job site, the Contractor shall obtain the approval of the Engineer before renting or otherwise acquiring additional equipment. The rental charges for the additional equipment shall not exceed the latest applicable Associated Equipment Distributors published rental rates.

GC-22.02 Decreased Work. If a modification decreases the amount of work to be done, such decreases shall not constitute the basis for a claim for damages or anticipated profits on work affected by such decrease. Where the value of omitted work is not covered by applicable unit prices, the Engineer shall determine on an equitable basis the amount of (a) credit due the Owner for contract work not done as a result of an authorized change, (b) allowance to the Contractor for any actual loss incurred in connection with the purchase, delivery, and subsequent disposal of material or equipment required for use on the work as planned and which could not be used in any part of the work as actually built, and (c) any other adjustment of the contract amount where the method to be used in making such adjustment is not clearly defined in the contract documents.

Unless otherwise agreed upon by the Owner and the Contractor, the credit due the Owner for reduction in the amount of work to be done shall be the estimated field cost of the deleted work plus an overhead allowance of:

1. Ten (10) percent of the estimated field cost if the work was to have been done by the Contractor's own forces, or
2. Fifteen (15) per cent of the estimated field cost if the work was to have been done by a subcontractor.

Field cost referred to above shall include the category of costs herein before listed as actual field costs, item (a) to (f) inclusive of the paragraph entitled "Extra Work".

GC-23. ARBITRATION. Before bringing any action in court pertaining to a decision of the Engineer, the objector (hereinafter referred to as Party A) to the decision shall first offer to arbitrate the question with the other party to the contract (hereinafter referred to as Party B) by notifying him in writing and setting forth in such notice the question to be arbitrated.

Party B can elect to arbitrate or not. If Party B agrees to arbitrate he shall so advise Party A in writing within ten (10) days after receipt of Party A's notice. Notice by Party B that he does not wish to arbitrate or failure of Party B to notify Party A within the ten (10) day period will give Party A the right to start action in court.

If Party B agrees to arbitrate, Party A shall choose an arbitrator and shall notify Party B of the name of the arbitrator within ten (10) days after receipt of Party B's notice. Party B shall notify Party A in writing within ten (10) days after receipt of the said notice that the arbitrator named by Party A shall act as sole arbitrator or shall name an additional arbitrator. If Party B names an additional arbitrator, then the arbitrator named by Party A and the arbitrator named by Party B shall choose a third arbitrator.

The arbitrator or arbitrators shall act with promptness. In the case of three arbitrators, the decision of any two shall be binding on both parties to the contract, as shall that of a single arbitrator if the dispute is submitted thereto as heretofore provided. The decision of the arbitrator or arbitrators may be filed in court to carry it into effect, if necessary.

If they consider that the case so demands, the arbitrator or arbitrators are authorized to award the party whose contention is sustained such sum or sums as the deem proper for the time, expense, and trouble incident to the appeal, and if the appeal was taken without reasonable cause they may award damages for any delay occasioned thereby. The arbitrators shall receive reasonable compensation for their services. The arbitrators shall assess the costs and charges of the arbitration upon either or both parties. The Decision of the arbitrators must be made in writing and shall not be open to objection on account of the form of proceedings or award.

If for any reason, after the said notices have been duly given by Party A and Party B, the arbitrators appointed shall be unable or shall fail to act with reasonable promptness in appointing a third arbitrator, Party A (or, if he does not do so within a reasonable time, Party B) may request a judge of the United States District Court who regularly holds court in the district in which the site of the work, or any part thereof, is located, to appoint the third arbitrator. If it appears to the judge that the two arbitrators originally appointed were unable or failed to act with reasonable promptness in appointing a third arbitrator, he may appoint the said third arbitrator and such an appointment shall constitute a conclusive determination that the arbitrators original appointed we so unable or failed to act with reasonable promptness and, if the said judge acted at the request of Party B, that Party A did not make such request within a reasonable time.

If for any reason after the arbitrator or arbitrators have been duly appointed, the arbitrator or arbitrators shall be unable or shall fail to act with reasonable promptness in reaching a decision regarding the question submitted to arbitration. Party A (or, if he does not do so within a reasonable time, Party B) may request a judge of the United States District Court who regularly holds court in the district in which the site of the work, or any part thereof, is located, to appoint three new arbitrators to act thereunder.

If it appears to such judge that the arbitrator or arbitrators originally appointed were unable or failed to act with reasonable promptness in reaching a decision regarding the question submitted to arbitration, he may appoint three new arbitrators to act hereunder and such an appointment shall constitute a conclusive determination that the arbitrator or arbitrators originally appointed we so unable or failed to act with

reasonable promptness, and, if the said judge acted at the request of Party B, that Party A did not make such request within a reasonable time.

If for any reason a third arbitrator, or three new arbitrators shall not be appointed by a judge of the United States District Court under the circumstances herein above described, or if three new arbitrators are so appointed and are unable or fail to act with reasonable promptness in reaching a decision regarding the question submitted to arbitration, then the arbitration procedure shall be deemed to have failed, and the parties shall be free to assert their rights in the same manner as if they has not agreed to submit the question to arbitration.

If the above agreement to submit questions of dispute to arbitration is not enforceable under the law of applicable jurisdiction, each such question after it has arisen may, by agreement of both parties, be submitted to arbitration in the manner set forth above.

The contractor shall not cause a delay of the work during any arbitration proceedings. It is understood and agreed by the parties to the contract that no requirement or statement herein shall be interpreted as curtailing the power to the Engineer to determine the amount, quality, and acceptability of work and materials.

GC-24. EMERGENCY PROTECTION. Whenever, in the opinion of the Owner or Engineer, the Contractor has not taken sufficient precaution for the safety of the public or the protection of the work to be constructed under this contract or of adjacent structures or property, and whenever, in the opinion of the Owner, an emergency has arisen and immediate action is considered necessary, then the Owner, with or without notice to the Contractor, may provide suitable protection by causing work to be done and materials to be furnished and placed. The cost of such work and material shall be borne by the Contractor, and, if the same is not paid on presentation of the bills therefore, such costs may be deducted from any amounts due or to become due the Contractor. The performance of such emergency work shall not relieve the Contractor of responsibility for any damages that may occur.

GC-25. ASSIGNMENT AND SUBCONTRACTING. The Contractor shall not assign or subcontract the work or any part thereof, without the previous written consent of the Owner, nor shall he assign, by power of attorney or otherwise, any of the money payable under this contract unless written consent of the Owner has been obtained. No right under this contract, nor claim for any money due or to become due hereunder shall be asserted against the Owner, or persons acting for the Owner, by reason of any so-called assignment of this contract or any part thereof, unless such assignment has been authorized by the written consent of the Owner.

In case the Contractor is permitted to assign moneys due or to become due under this contract, the instrument of assignment shall contain a clause subordinating the claim of the assignee to all prior liens for services rendered or materials for the performance of the work.

GC-26. RIGHT OF OWNER TO TERMINATE CONTRACT. If the work to be done under this contract is abandoned by the Contractor; or if this contract is assigned by him without the written consent of the Owner; or if the Contractor is adjudged bankrupt; or if a general assignment of his assets is made for the benefit of his creditors; or if a receiver is appointed for the Contractor or any of his property; or if at any time the Engineer certifies in writing to the Owner that the performance of the work under this contract is being unnecessarily delayed, that the Contractor is violating any of the conditions of this contract, or that he is executing the same in bad faith or otherwise not in accordance with the terms of said contract; or if the work is not substantially completed within the time named for its completion or within the time to which such completion date may be extended; then the Owner may serve written notice upon the Contractor and his surety of the Owner's intention to terminate this contract.

Unless within five (5) days after the serving of such notice, a satisfactory arrangement is made for continuance, this contract shall terminate. In the event of such termination, the surety shall have the right to take over and complete the work, provided that is the surety does not commence performance within thirty (30) days, the Owner may take over and prosecute the work to completion, by contract or otherwise. The Contractor and his surety shall be liable to the Owner for all excess cost sustained by the Owner by reason of such prosecution and completion. The Owner may take possession of, and utilize in completing the work, all material, equipment, tools, and plant on the site of the work.

The Owner may upon seven days written notice terminate the Contract for the Owner's convenience and without cause. Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall: (a) cease operations as directed by the Owner in the notice; and (b) take actions necessary for the protection and preservation of the work. In the event of a termination for convenience, the Contractor shall be paid for completed and acceptable work executed prior to the effective date of termination and shall be reimbursed for reasonable expenses directly attributable to the termination; the Contractor shall not be entitled to payment for overhead or profit on work not performed or for lost anticipated profits or revenue.

GC-27. SUSPENSION OF WORK. The Owner reserves the right to suspend and reinstate execution of the whole or any part of the work without invalidating the provisions of the contract. The Owner will issue orders for suspension or reinstatement of work to the Contractor in writing. The time for completion of the work will be extended for a period equal to the time lost by reason of the suspension.

The Owner will pay extra costs and expenses which, in the opinion of the Engineer, are caused by work suspensions ordered by the Owner to the Contractor.

The Contractor has the right to terminate the contract if the work is unilaterally suspended for 90 days, upon reasonable notice and the opportunity for the Owner to reinstate the work.

GC-28. LOSSES FROM NATURAL CAUSES. All loss or damage arising out of the nature of the work, or from the action of the elements, or from floods or overflows, or from ground water, or from any unusual obstruction or difficulty or any other natural or existing circumstance either known or foreseen, which may be encountered in the prosecution of the work, shall be sustained and borne by the Contractor at his own cost and expense.

GC-29. LAWS AND REGULATIONS. The Contractor shall observe and comply with all ordinances, laws, and regulations, and shall protect and indemnify the Owner and the Owner's officers and agents against any claim or liability arising from or based on any violation of the same.

The Contractor shall comply with all regulations of agencies having jurisdiction with respect to sanitation.

The Department of Labor has adopted standards entitled "The Occupational and Health Standard Regulations" and subsequent amendments noted as Chapter XVII of Title 29, Code of Regulations, Part 1926 (formerly Chapter XIII of Title 29, CFR, Part 1518). The Contractor on the work included herein agrees to comply with the Occupational Safety and Health Standards of the United States Department of Labor pursuant to the William's - Steiger Occupational Safety Act of 1970.

GC-30. TAXES AND PERMITS. Unless otherwise specified in these contract documents, the Contractor shall pay all sales, use and other taxes that are lawfully assessed against the Owner or Contractor in connection with the work included in the contract and shall obtain and pay for all licensed, permits, and inspections required for the work.

GC-31. CHARACTER OF WORKERS. The Contractor shall employ only workers who are competent to perform the work assigned to them and, in the case of skilled labor, who are adequately trained and experienced in their respective trades, and who do satisfactory work.

Whenever the Owner or Engineer shall notify the Contractor that any man on the work is, in its opinion, incompetent, unfaithful, or disorderly, or who uses threatening or abusive language to any person representing the Owner when on the work, such man shall be immediately discharged from the work and shall not be re-employed thereon except with the consent of the Owner.

GC-32. INSPECTION OF THE TANK OR STRUCTURE. No additional compensation will be allowed because of Contractor's misunderstanding as to the amount of work involved or lack of knowledge of any of the conditions pertaining to the work based on Contractor's neglect or failure to make examination of the work site.

GC-33. UNFAVORABLE CONSTRUCTION CONDITIONS. During unfavorable weather, wet ground, or other unsuitable construction conditions, the Contractor shall confine his operations to work that will not be affected adversely thereby. No portion of the work shall be constructed under conditions that would affect adversely the quality or efficiency thereof, unless special means or precautions are taken by the Contractor to perform the work in a proper and satisfactory manner.

GC-34. BEGINNING, PROGRESS, AND TIME OF COMPLETION OF WORK. Unless otherwise specified, the Contractor shall begin work under this contract within ten (10) days after the date designated in a written order from the Owner to begin work. The rate of progress shall be such that the work will be completed in accordance with the terms of the contract on or before the termination of the construction period in the Contract Agreement. The Contractor shall furnish the Engineer a detailed schedule setting forth the procedure he proposes to follow and giving the dates he expects to start and to complete separate portions of the work. If in the opinion of the Engineer proper progress is not being maintained, charges shall be made in the Contractor's operations to assure proper progress.

GC-35. DELAYS. As a condition precedent to seeking any extension of time or equitable adjustment to the Contract price due to delays, the Contractor must give the Owner and Engineer written notice of the delay within 48 hours of the event(s) giving rise to the claimed delays. Upon giving of such written notice, the Contractor's rights in the event of delays shall be the following:

1. Where the Contractor is prevented from completing any part of the work within the contract times due to delay beyond the control of the Contractor, the contract times will be extended in an amount equal to the time lost due to such delay. Delays beyond the Contractor's control shall include, without limitation, the acts or neglect of the Owner or its agents, fires, floods, epidemics, acts of war or terrorism, abnormal weather conditions, or acts of God.
2. If the Contractor is delayed for reasons beyond the control of the Contractor, and beyond the control of the Owner or its agents, the Contractor's remedy shall be limited to an extension of time equal to the time lost due to such delay and such extension shall be the Contractor's sole remedy.
3. If the Contractor is delayed as a result of the acts or neglect of the Owner or its agents, the Contractor shall be entitled to an extension of time equal to the time lost due to such delay and an equitable adjustment to the Contract price.

The Contractor shall not be entitled to any adjustment to the contract time or the contract price on account of delays that arise the acts or neglect of the Contractor or its agents.

GC-36. RESERVED.

GC-37. MATERIALS AND EQUIPMENT. Unless specifically provided otherwise in each case, all materials and equipment furnished for permanent installation in the work shall conform to applicable standard specifications and shall be new, unused, and undamaged when installed or otherwise incorporated in the work. No such material or equipment shall be used by the Contractor for any purpose other than that intended or specified, unless such use is specifically authorized by the Engineer in each case.

All required tests in connection with approval of source of materials shall be made at the Contractor's expense by a properly equipped laboratory of established reputation whose work and testing facilities are acceptable to the Owner and approved by the Engineer. Any change in origin or method of preparation or manufacture of a material being routinely tested will require new tests and approval thereof. Reports of all tests shall be furnished to the Engineer or Owner in as many copies as required.

GC-38. REJECTED WORK AND MATERIALS. The Contractor, upon verbal or written notice from the Engineer or the Owner, shall remove from the premises all work and materials rejected as defective, unsound, improper, or in any way failing to conform to the requirements of the contract documents. The Contractor shall at his sole expense make good all work damaged by such removal and shall promptly replace materials damaged or improperly worked by him and re-execute his own work in accordance with the contract. This includes re-executing or replacing the work of any other contractor that

is in any way affected by the removal of the defective work. The obligations of the Contractor under this section shall not extend to defective materials or equipment supplied by the Owner.

If the Contractor does not remove his rejected work and materials within ten (10) days after written notice, the Owner may remove and replace such work and materials at the expense of the Contractor.

GC-39. PLACING WORK IN SERVICE. If desired by the Owner, portions of the work may be placed in service when completed and the Contractor shall provide proper access for this purpose. Such use and operation shall not constitute an acceptance of the work, and the Contractor shall be liable for defects due to faulty construction throughout the duration of this contract and thereafter as provided under the guarantee.

GC-40. DISPOSAL OF TRASH AND DEBRIS. The Contractor shall clean the working areas each day, shall remove all trash and waste materials, and shall maintain the site in a neat and orderly condition throughout the construction period. The Engineer shall have the right to determine what are waste material or rubbish and the manner and place of disposal. On or before the completion of the work the Contractor shall carefully clean out all pits, pipes, chambers, or conduits; shall remove all temporary structures built by him; and shall remove all rubbish from the areas which he has occupied, leaving them in first-class condition.

GC-41. GUARANTEE. The Contractor guarantees that the equipment, materials and workmanship furnished under this contract will be as specified and will be free from defects for a period of two (2) years from the date of substantial completion. In addition, the equipment furnished by the Contractor shall be guaranteed to be free from defects in design.

Within the guarantee period and upon notification of the Contractor by the Owner, the Contractor shall promptly make all needed adjustment repairs or replacements arising out of defects which, in the judgment of the Engineer or the Owner become necessary during such period.

The cost of all materials, parts, labor, transportation, supervision, special tools and supplies required for replacement of parts, repair of parts, or correction of abnormalities shall be paid by the Contractor, or by his surety under the terms of the Performance Bond.

The Contractor also extends the terms of this guarantee to cover repaired parts and all replacement parts furnished under the guarantee provisions for a period of one (1) year from the date of their installation.

If within ten (10) days after the Owner gives the Contractor notice of a defect, failure, or abnormality of the work, the Contractor neglects to make, or undertake with due diligence to make, the necessary repairs or adjustments, the Owner is hereby authorized to make the repairs or adjustments himself or order the work to be done by a third party, the cost of the work to be paid by the Contractor.

In the event of an emergency where, in the judgment of the Owner, delay would cause serious loss or damage, repairs or adjustments may be made by the Owner, or a third party chosen by the Owner, without giving notice to the Contractor, and the cost of the work shall be paid by the Contractor, or by his surety under the terms of the Performance Bond.

GC-42. CLAIMS FOR LABOR AND MATERIALS. The Contractor shall indemnify and hold harmless the Owner from all claims for labor and materials furnished under this contract. When requested by the Owner, the Contractor shall submit satisfactory evidence that all persons, firms, or corporations who have done work or furnished materials under this contract, for which the Owner may become liable under the laws of the state, have been fully paid or satisfactorily secured. In case such evidence is not furnished or is not satisfactory, an amount will be retained from money due the Contractor which in addition to any other sums that may be retained will be sufficient, in the opinion of the Owner, to meet all claims of the persons, firms, and corporations as aforesaid. Such sums shall be retained until the liabilities as aforesaid are fully discharged or satisfactorily secured. Before final acceptance of the work by the Owner, the Contractor shall submit to the Engineer in duplicate a notarized affidavit stating that all subcontractors, vendors, persons, or firms who have furnished labor or material for the work have been fully paid and Minnesota Department of

Revenue Form IC-134 certifying that all taxes have been paid. A statement from the Surety shall also be submitted consenting to the making of the final payment.

GC-43. CONTRACTOR'S BREAKDOWN ESTIMATE. If the contract is based on a lump sum bid, or contains one or more lump sum items for which partial payments are desired, the Contractor shall prepare and submit to the Engineer for approval a breakdown estimate covering each lump sum item. The Engineer shall approve each breakdown estimate, showing the value of each kind of work, before any partial payment estimate is prepared. Such items as bond premium, temporary construction facilities, and plant may be listed separately in the breakdown estimate, provided that their costs can be substantiated.

The Sum of the item listed in the breakdown estimate shall equal the contract lump sum price or prices. Overhead and profit shall not be listed as separate items.

An unbalanced breakdown estimate providing for overpayment of the Contractor on items of work, which would be performed first, will not be accepted. Breakdown estimates shall be revised and resubmitted until acceptable to the Engineer.

GC-44. FINAL INSPECTION. When the work has been substantially completed and at a time mutually agreeable to the Owner, Engineer, and Contractor, the Engineer will make final inspection of the work and report to the Owner his findings as to the acceptability and completeness of the work.

GC-45. RELEASE OF LIABILITY. The acceptance by the Contractor of the last payment shall be a release to the Owner and every officer and agent thereof, from all claims and liability hereunder for anything done or furnished for, or relating to the work, or for any part or neglect of the Owner or of any person relating to or affecting the work.

GC-46. DEFENSE OF SUITS. In case any action in court is brought against the Owner or Engineer, or any officer or agent of either of them, for the failure, omission, or neglect of the Contractor to perform any of the covenants, acts, matters, or things by this contract undertaken; or for injury of damage caused by the alleged negligence of the Contractor or his subcontractors or his or their agents, or in connection with any claim based on lawful demands of subcontractors, workmen, material men, or suppliers; the Contractor shall indemnify and hold harmless the Owner and Engineer and their officers and agents, from all losses, damages, costs, expenses, judgments, or decrees arising out of such action.

GC-47. INSURANCE. The Contractor shall secure and maintain throughout the duration of this contract insurance of such types and in such amounts as may be necessary to protect himself and the interests of the Owner against all hazards or risks of loss as hereinafter specified. The form and limits of such insurance, together with the underwriter thereof in each case, shall be approved by the Owner but regardless of such approval it shall be the responsibility of the Contractor to maintain adequate insurance coverage at all times. Failure of the Contractor to maintain adequate coverage shall not relieve him of any contractual responsibility or obligation. The Owner shall be named as an additional insured on the Contractor's commercial general liability and comprehensive automobile liability coverages.

Satisfactory certificates of insurance shall be filed with the Owner prior to starting any construction work on this contract. The certificates shall state that thirty (30) days written notice will be given to the Owner before any policy covered thereby is changed or canceled.

The Contractor shall not commence work under the contract until he has obtained all of the insurance required by these specifications, and until such insurance has been approved by the Owner or its agents; nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor shall have been so obtained and approved.

The Contractor shall furnish the Owner with one (1) copy of the certificate of insurance from the insurance company issuing the policies covering Bodily Injury Liability, and Property Damage Liability Insurance, Completed Operations (Products) Liability Insurance, Automobile Liability Insurance and Workmen's Compensation. One copy of the memorandum of the insurance only, and not the original policy on Builder's Risk Insurance, with endorsements attached, providing fire and extended coverage, vandalism and

malicious mischief, and any other endorsements required by the special conditions of the specifications shall be furnished.

All policies and certificates shall provide that the policies shall remain in force and effect, except on ten (10) days written notice to the Owner, before cancellation, expiration, or change in any way that would affect the coverage afforded to name insured. Bodily Injury Liability, and Property Damage Liability Insurance, and other liability insurance required by the Contract shall provide that the insurance company waives the right to assert the immunity of the Owner as a defense to any claim made under said insurance, and such endorsements shall be submitted.

Nothing herein shall be construed to waive the Owner's tort liability limits under Minnesota Statutes, Chapter 466, except and only to the extent of valid and collectible insurance coverage.

GC-47.01 WORKMAN'S COMPENSATION AND EMPLOYER'S LIABILITY. This insurance shall protect the Contractor against all claims under applicable state workmen's compensation laws. The Contractor shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workmen's compensation law. This policy shall include an "all states" endorsement.

The liability limits shall not be less than the following:

Workmen's Compensation	Statutory
Employer's liability	\$500,000 each person \$500,000 each occurrence

GC-47.02 COMPREHENSIVE AUTOMOBILE LIABILITY. This insurance shall be written in comprehensive form and shall protect the Contractor against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles licensed for highway use, whether they are owned non-owned, or hired.

The liability limits shall not be less than the following:

\$1,000,000 Combined Single Limits Bodily Injury and Property Damage.

GC-47.03 COMMERCIAL GENERAL LIABILITY. This insurance shall be written in comprehensive form and shall protect the Contractor against all claims arising from injuries to members of the public or damage to property of others arising out of any act or omissions of the Contractor or his agents, employees, or subcontractors. In addition, this policy shall specifically insure the contractual liability assumed by the Contractor under the foregoing paragraph entitled "Defense of Suits".

Commercial General Liability shall be provided as follows:

\$1,000,000 Each Occurrence Bodily Injury
\$2,000,000 Aggregate Bodily Injury
\$1,000,000 Each Occurrence Property Damage
\$2,000,000 Aggregate Property Damage

The Commercial General Liability shall provide all of the following coverage:

- Operations of the Contractor
- Operations of the Subcontractors (contingent)
- Products/Completed Operations (to be carried for one (1) year after completion of contract)
- Broad Form Property Damage (including completed operations)
- Personal Injury Liability (Perils A, B, C)
- Employees as Additional Insurers
- Property Damage Hazards- Explosion, Collapse and Underground (if an exposure exists)

- Broad Form Blanket Contractual

GC-47.04 INDEMNITY. The Contractor shall indemnify and hold harmless, including reasonable attorney fees, the Owner and KLM ENGINEERING Inc., from and against all losses and claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against him by reason of any act or omission of the said contractor, his agents, or employees, in the execution of the work.

GC-47.05 OWNER'S LIABILITY INSURANCE. The Contractor at his expense will purchase and maintain during the life to the contract Owner's protective liability with limits of:

\$1,000,000 Each Occurrence Bodily Injury
 \$1,000,000 Aggregate Bodily Injury
 \$1,000,000 Each Occurrence Property Damage
 \$1,000,000 Aggregate Property Damage

And shall name as an additional insured KLM ENGINEERING, Inc.

The Department of Labor has adopted standards entitled "The Occupational and Health Standard Regulations" and subsequent amendments noted as Chapter XVII of Title 29, Code of Regulations, Part 1926 (formerly Chapter XIII of Title 29, CFR, Part 1518). The Contractor on the work included herein agrees to comply with the Occupational Safety and Health Standards of the United States Department of Labor pursuant to the William's - Steiger Occupational Safety Act of 1970.

GC-48. ESTIMATES AND PAYMENTS. On or about the first day of each month, the Engineer will make an estimate of the value of the work done. The estimated cost of repairing, replacing, or rebuilding any part of the work or replacing materials which do not conform to the plans and specifications will be deducted from the estimated value.

The Contractor shall furnish to the Engineer such detailed information as he may request to aid him as a guide in the preparation of monthly estimates. After the Engineer and the Owner have approved each estimate, the Owner will pay to the Contractor ninety-five (95) per cent of the estimated value less any previous payments.

After official approval and acceptance of the work by the Owner, the Engineer will be authorized to prepare a final estimate of the work done under this contract. Preparation of the final estimate will not be authorized until the affidavit and statement required in the paragraph entitled "Claims for Labor and Materials" have been received.

The final estimate will be submitted to the Owner within ten (10) days after its preparation has been authorized. The Owner will, within thirty (30) days thereafter, pay the entire sum found to be due after deducting all amounts to be retained under any provisions of this contract.

GC-49. DATA PRACTICES ACT. Pursuant to Minnesota Statutes § 13.05, Subd. 11, all of the data created, collected, received, stored, used, maintained, or disseminated by the Contractor in performing this contract is subject to the requirements of the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13, and the Contractor must comply with those requirements as if it were a government entity. The remedies in Minnesota Statutes § 13.08 apply to the Contractor. The Contractor does not have a duty to provide access to public data to the public if the public data are available from the City, except as required by the terms of this contract.

GC-50. PROMPT PAYMENT OF SUBCONTRACTORS. Contractor shall comply with Minn. Stat. § 471.425, Subd. 4a (Prompt Payment of Subcontractors), which is incorporated by reference herein.

GC-51. ANTI-DISCRIMINATION. Pursuant to Minnesota Statutes § 181.59, Contractor agrees:

1. that, in the hiring of common or skilled labor for the performance of any work under any contract, or any subcontract, no contractor, material supplier, or vendor, shall, by reason of race, creed, or color, discriminate against the person or persons who are citizens of the United States or resident aliens who are qualified and available to perform the work to which the employment relates;
2. that no contractor, material supplier, or vendor, shall, in any manner, discriminate against, or intimidate, or pre-vent the employment of any person or persons identified in clause (1) of this section, or on being hired, prevent, or conspire to prevent, the person or persons from the performance of work under any contract on account of race, creed, or color;
3. that a violation of this section is a misdemeanor; and
4. that this contract may be canceled or terminated by the state, county, city, town, school board, or any other person authorized to grant the contracts for employment, and all money due, or to become due under the contract, may be forfeited for a second or any subsequent violation of the terms or conditions of this contract.

GC-52. RECORD KEEPING. Pursuant to Minnesota Statutes § 16C.05, Subd. 5, Contractor agrees that the books, records, documents, and accounting procedures and practices of the Contractor, that are relevant to the contract or transaction, are subject to examination by the contracting agency and either the legislative auditor or the state auditor, as appropriate, for a minimum of six years. Contractor shall maintain such records for a minimum of six years after final payment.

CONTRACT DOCUMENTS

KLM Project MN 3408

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1.0 FORM OF AGREEMENT

THIS AGREEMENT, made and signed this _____ day of _____, 2016 by and between the City of Otsego, Minnesota hereinafter called the Owner, and _____ hereinafter called the "Contractor".

THIS AGREEMENT WITNESSETH, that the Owner and the Contractor, for the consideration hereinafter stated, agreed as follows:

ARTICLE I. The Contractor hereby covenants and agrees to perform and execute all the provisions of the plans and specifications as prepared by KLM Engineering, Inc., of Lake Elmo, Minnesota, and indicated below under ARTICLE IV, as provided by the Owner for Cleaning, Repairing and Painting 400,000 Gallon Elevated Water Tower and to do everything required by this Agreement and the Contract Documents.

ARTICLE II. The Contractor agrees that the work contemplated by KLM Project Number 3408 shall be started:

PROPOSAL No. 1: Start on or before May 26, 2017 and be completed by July 28, 2017 (63 calendar days), otherwise the liquidated damages will be deducted as specified in the specifications.

ARTICLE III. The OWNER agrees to pay and the Contractor agrees to receive and accept payment in accordance with the priced bid for the unit or lump sum items set forth in the Proposal Form and specifications as prepared by the Engineer, and indicated below under Article IV as approved by the Owner for conformed copy of the Proposal Form hereto attached, which prices shall conform to those in the accepted Contractors proposal on file in the office of _____ the aggregate of which prices, based on the approximate schedule of quantities, is estimated to be \$_____.

Monthly and final payments shall be made as provided for in the Project Requirements Section of the Project Specifications.

ARTICLE IV. The Contract Documents shall consist of the following component parts:

1. Notice of Hearing and Letting.
2. Instructions to Bidders.
3. Proposal.
4. Bid Bond.
5. General Conditions.
6. Supplemental Conditions.
7. Project Requirements.
8. Contract Documents.
9. Technical Specifications.
10. Performance and Payment Bonds.
11. This agreement.
12. Numbered addenda issued to the foregoing.

This agreement, together with the Documents herein above mentioned, form the contract, and all Documents are as fully a part of the contract as if attached hereto or herein repeated.

IN WITNESS WHEREOF, the parties to this agreement have hereunto set their hands and seals as of the day and year first above written.

Owner

Contractor

(SEAL)

By _____
Title

By _____
Title

By _____
Title

By _____
Title

In Presence of: _____

Attest: _____

CERTIFICATE OF ACKNOWLEDGMENT

State of Minnesota)
) SS.
County of)

On this _____ day of _____, 2016, before me personally appeared _____, to me personally known, being by me duly sworn, did say that he is the Mayor of the City of Otsego, that the seal affixed to the foregoing instrument is the seal of said City of Otsego, and that said instrument was executed on behalf of the City of Otsego by authority of its City Council, and said Mayor acknowledged the instrument to be the free act and deed of said City of Otsego.

(Notary Seal)

Notary Public

CERTIFICATE OF ACKNOWLEDGMENT
(For use where Contractor is individual or partnership)

State of Minnesota)
) SS.
County of _____)

On this _____ day of _____, 2016, before me personally appeared _____, to me personally known to be the person _____ described in and who executed the foregoing instrument and acknowledged that he executed the same as the free act and deed of the individual.

(Notary Seal)

Notary Public

CERTIFICATE OF ACKNOWLEDGMENT
(For use where Contractor is a corporation)

State of Minnesota)
) SS.
County of _____)

On this _____ day of _____, 2016, before me personally appeared _____ and _____, to me personally known who, being by me duly sworn, each did say that they are respectively the _____ and _____ of _____, that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was executed in behalf of the corporation by authority of its Board of Directors and said _____ and _____ acknowledged the instrument to be the free act and deed of the corporation.

(Notary Seal)

Notary Public

2.0 PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that _____
 as Principal (hereinafter called Contractor) and,

 as Surety (hereinafter called Surety) are held and firmly bound unto the City of Otsego
 as Owner (hereinafter called Owner) in the amount of _____
 Dollars (\$_____), for the payment whereof Contractor and
 Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly
 and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____,
 2016, entered into a contract with the Owner for construction of Cleaning, Repairing and
 Painting 400,000 Gallon Elevated Storage Reservoir in accordance with Plans and Specifications
 prepared by
 KLM ENGINEERING, Inc. which contract is by reference made a part hereof, and is
 hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if
 Contractor shall promptly and faithfully perform said Contract in conformance with the Contract
 Documents, and all guaranty, indemnity and warranty obligations specified therein, and shall
 promptly and faithfully remedy any breach of its obligation under the Contract Documents
 discovered within the time limits set by statute for commencement of actions, and shall pay any
 damages for unexcused late completion, then this obligation shall be null and void; otherwise it
 shall remain in full force and effect.

The Surety hereby waives notice of any alteration, changes or extension of time made by
 the Owner.

Whenever the Contractor shall be, and declared by the Owner to be in default under the
 Contractor, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions, or if
 appropriate,

(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Surety, and make available as Work progresses (even though there shall be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion and other costs and damages for which the Surety may be liable hereunder, but not exceeding the amount set forth in the first paragraph hereof less the balance of the contract price. The term "Balance of the contract price", as used in this paragraph shall mean the total amount payable by the Owner to Contractor under the Contract and any amendments thereto, less the amount paid by the Owner to Contractor, of if appropriate,

(3) Promptly pay such sums to the Owner as the Owner may be entitled from the Contractor under the Contract Documents, or for the breach thereof, but not exceeding the amount set forth in the first paragraph hereof.

The Surety agrees to be bound by any award granted to the Owner against the Contractor in arbitration or judicial proceedings commenced pursuant to the Contract Documents.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the successors of the Owner.

Signed and sealed this _____ day of _____, 2016.

Witness

Contractor

Witness

By _____
Signature

(Typed or Printed name of Signer)

Title _____

Notary Public

By _____
Signature

(Typed or Printed name of Signer)

Title _____

(Notary Seal)

(If the contractor is a partnership or joint venture, all partners or co-ventures must execute this Bond.)

Surety

Address

Phone No.

Witness

By _____
Signature

(Typed or Printed Name of Signer)

Title _____

(Local Address & Telephone Number)

(The attorney-in-fact shall attach hereto a copy of his power of attorney or other document which authorizes him to act on behalf of and to bind the surety.)

CERTIFICATE OF ACKNOWLEDGMENT BY PRINCIPAL

(For use where Contractor is individual or partnership)

State of Minnesota)
) SS.
County of)

On this _____ day of _____, 2016, before me personally appeared _____, to me known to be the person _____ described in and who executed the foregoing bond, and acknowledged that ___he___ executed the same as the free act and deed of the individual.

Notary Public

(Notary Seal)

CERTIFICATE OF ACKNOWLEDGMENT

(For use where Contractor is a corporation)

State of Minnesota)
) SS.
County of)

On this _____ day of _____, 2016, before me personally appeared _____ and _____, to me personally known who, being by me duly sworn, did say that they are respectively the _____ and _____, of _____ that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was executed in behalf of the corporation by authority of its Board of Directors, and said _____ and _____ acknowledged the instrument to be the free act and deed of said corporation.

Notary Public

(Notary Seal)

Full Name of Surety Company

Home Office Address

Full Name of Surety Co. Name of Local Agency Address of Local Agency

If this bond is executed outside of the State of Minnesota, it must be countersigned on the Performance Bond by a Minnesota resident agent of the Surety Company.

Name of Agent Affixing Countersignature Address

MEMORANDUM: Affix here Power of Attorney and Acknowledgment of Corporate Surety.

3.0 LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that _____

as Principal, (hereinafter called Contractor) and,

as Surety (hereinafter called Surety) are held and firmly bound unto the City of Otsego

as Owner (hereinafter called Owner) for the use and benefit of

claimants as here-in-below defined, in the amount of _____

Dollars (\$ _____), for the payment whereof Contractor and Surety bind themselves,

their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these

presents.

WHEREAS, Contractor has by written agreement dated _____, entered

into a contract with Owner for construction of Cleaning, Repairing and Painting 400,000 Gallon Elevated Storage Reservoir in accordance with Drawings and Specifications prepared by KLM ENGINEERING, Inc. which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract and shall keep the Project free and clear of all liens as provided in the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. Claimant is defined as one permitted by applicable law to file a Public Contractor's Bond claim for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include without limitation that part of water, gas, power, light, heat, oil, gasoline, telephone service, rental of equipment, insurance premiums, taxes, and any items for which a claim or lien may be filed against the Owner under the applicable law.

2. The above named Contractor and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

- (a) Unless claimant shall have filed a public contractor bond claim in the form and within the time provided under applicable law, or
- (b) After expiration of time for enforcement of a public Contractors bond claim by legal action.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

5. The Contractor and Surety shall keep the Project free and clear of liens and shall promptly remove any and all liens filed against the Project by claimants.

6. The Owner's right of action on this bond, or for the breach thereof, shall not be limited by the conditions set forth in paragraphs 1 through 3 above.

Witness

Contractor

Witness

By _____
Signature

(Typed or Printed name of Signer)

Title _____

Notary Public

By _____
Signature

(Typed or Printed name of Signer)

Title _____

(If the contractor is a partnership or joint venture, all partners or co-ventures must execute this Bond.)

(Notary Seal)

(If the contractor is a partnership or joint venture, all partners or co-ventures must execute this Bond.)

Surety

Address

Phone No.

Witness

By _____
Signature

(Typed or Printed Name of Signer)

Title _____

(Local Address & Telephone Number)

(The attorney-in-fact shall attach hereto a copy of his power of attorney or other document authorizes him to act on behalf of and to bind the surety.)

which

CERTIFICATE OF ACKNOWLEDGMENT BY PRINCIPAL

(For use where Contractor is individual or partnership)

State of Minnesota)
) SS.
County of)

On this _____ day of _____, 2016, before me personally appeared _____, to me known to be the person _____ described in and who executed the foregoing bond, and acknowledged that ___he___ executed the same as the free act and deed of the individual.

Notary Public

(Notary Seal)

CERTIFICATE OF ACKNOWLEDGMENT

(For use where Contractor is a corporation)

State of Minnesota)
)SS.
County of)

On this _____ day of _____, 2016, before me personally appeared _____ and _____, to me personally known who, being by me duly sworn, did say that they are respectively the _____ and _____, of _____ that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was executed in behalf of the corporation by authority of its Board of Directors, and said _____ and _____ acknowledged the instrument to be the free act and deed of said corporation.

Notary Public

(Notary Seal)

Full Name of Surety Company

Home Office Address

Full Name of Surety Co. Name of Local Agency Address of Local Agency

If this bond is executed outside of the State of Minnesota, it must be countersigned on the Performance Bond by a Minnesota resident agent of the Surety Company.

Name of Agent Affixing Countersignature Address

MEMORANDUM: Affix here Power of Attorney and Acknowledgment of Corporate Surety.

APPENDIX A

INSPECTION REPORT

ELEVATED WATER TANK INSPECTION REPORT

JANUARY 2016

**400,000 GALLON CAPACITY
TOWER NUMBER ONE
OTSEGO, MINNESOTA**

KLM PROJECT MN 3408



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1.0 PROJECT INFORMATION

KLM Project No.: MN 3408 **Customer P. O. Number:** _____
Customer: City of Otsego, Minnesota **Phone:** 763-428-9215
Street/City/State/Zip: 5850 Randolph Ave NE, Otsego, Minnesota 55374
Customer Contact: Kurt Neidermeier, Utility Manager
Tank Owner: City of Otsego, Minnesota **Phone:** 763-428-9215
Tank Owner Contact: Kurt Neidermeier, Utility Manager
Owner's Tank Designation: Tower Number One
Tank Description: Single Pedestal
Tank Street Location: 15997 70th Street NE, Otsego MN 55330
Purpose of Inspection: Condition Assessment
Date of Inspection: January 27, 2016
Inspected By: Rodney Ellis, NACE #1686
Type of Inspection: KLM Standard Wet Tank Evaluation
Manufacturer: Maguire Iron **Construction Date:** 1999
Serial No.: None **Design Code:** AWWA D100-96
Capacity: 400,000 Gallons
Type of Construction: Welded
Tank Diameter: 58-feet
Height: Overall 147-feet
Height to: HWL 144'-6" LWL 109'-6"
Type of Access to Tank Interior: Interior ladder to roof manway
Tank Construction Drawings: Yes
Previous Inspection Records: AEC Eng. 1999, CTC 2009, KCI 2009 and 2015

EXISTING COATING INFORMATION

	<u>INTERIOR WET</u>	<u>INTERIOR DRY</u>	<u>EXTERIOR</u>
Date Last Coated	1999	1999	1999
Full or Spot Repair	New	New	New
Coating Contractor	Maguire Iron	Maguire Iron	Maguire Iron
Surface Preparation	SSPC SP-10	SSPC SP-6	SSPC SP-6
Paint System	Epoxy	Epoxy	Epoxy/Urethane
Paint Manufacturer	Tnemec	Tnemec	Tnemec
Lab Lead Test Paint Chips	Not Taken	Not Taken	Not Taken

2.0 **EXECUTIVE SUMMARIES**

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 not analyzed as part of this contract. Based on previous inspections, knowledge of the tank, and coating application in 1999, KLM anticipates that neither the interior or exterior coatings are lead or chromium based paints, and will not generate hazardous waste during reconditioning.

2.2.2 **Interior Wet Coating**

The tower was constructed and the interior wet area was last coated in 1999 by Maguire Iron. Based on previous reports by KCI it appears that the interior wet coating is in poor condition with approximately five (5) to ten (10) percent coating failures above the high water line (HWL), and up to sixty (60) percent coating failures below the HWL. Due to condition and age the coating is not considered repairable and should be replaced in its entirety within one (1) to two (2) years. See photos in Appendix A.

2.2.3 **Interior Dry Coating**

The tower was constructed and the interior dry area was last coated in 1999 by Maguire Iron. The interior dry coating is in good to excellent condition, with coating failures limited to areas susceptible to condensation, such as the drywell tube and bowl (sweating areas), and the platform floors. The coating in the remainder of the dry area is in good condition with minimal failures observed. The coating in the sweating areas is not repairable and should be replaced at the same time of the interior wet coating replacement within one (1) to two (2) years. See photos in Appendix A.

2.2.4 Exterior Coating

The tower was constructed and the exterior was last coated in 1999 by Maguire Iron. Due to age and testing data, the exterior coating is marginally considered repairable and should be replaced in its entirety at the same time as interior coating replacement within one (1) to two (2) years. See photos in Appendix A. See photos in Appendix A.

It is more cost effective to remove the exterior and the interior coating at the same time.

2.3 **Repair and Reconditioning Cost Estimate**

The costs for structural repairs, replacing the interior and exterior coatings (including the containment) are estimated between \$325,000.00 and \$380,000.00. 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 nine (9) 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 one (1) to two (2) years, the tank will be satisfactory for continued service provided that it is inspected and maintained regularly.

Based on the inspection data, the tower will remain suitable for extended continued service provided that it is inspected regularly and maintenance is performed in accordance with the recommendations of those inspections.

The tank and coating should first be inspected within the warranty period and every three to five 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.

Based on an evaluation of the inspection data, the recommendations are:

3.1 Interior Wet Structural

- 3.1.1 Field verify with rigging if the horizontal lap seam on the upper torus is seal welded. If no weld is present, seal weld the seam to comply with AWWA D100-11, and prevent rust streaking and corrosion in areas inaccessible to paint.
- 3.1.2 Replace the tank bowl drain coupling and plug with stainless steel fittings. This will permit removing the plug for cleaning and draining the bowl below the inlet pipe level. See KLM Drawing No. 23. Add a "T" handle wrench for the drain plug in the tank bowl. See photo 4, and 16 and KLM Drawing No. 5.
- 3.1.3 Remove the existing frost free drain, coupler, and connecting line to the overflow pipe in its entirety. Repair the resulting holes in the bowl and overflow pipe by seal welding plates in place including back-gouging where applicable. See photo 4, 5 and 16.
- 3.1.4 Modify the existing mud ring on the inlet/outlet pipe. Currently it is not connected to the pipe.
- 3.1.5 Replace the gasket on the 24-inch diameter round bowl manway. See photos 3 and 16.
- 3.1.6 Remove all erection bracket scab marks and weld spatter below the HWL by air arc gouging, cutting torch, or grinding. Repair the tank surface by welding and grinding. This will comply with AWWA D100-11. This work will require approximately 25 man-hours.
- 3.1.7 Install a Grid-Bee GS-12 Submersible Mixer in the tower including bracketing, and applicable electrical, 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.

3.2 Interior Wet Coating

- 3.2.1 Based on previous reports by KCI it appears that the interior wet coating is in poor condition with approximately five (5) to ten (10) percent coating failures above the high water line (HWL), and up to sixty (60) percent coating failures below the HWL. Due to condition and age the coating is not considered repairable and should be replaced in its entirety within one (1) to two (2) years. See photos 16 through 20.

3.3 Cathodic Protection System (C. P.)

- 3.3.1 The reservoir does not have a Cathodic Protection system, and one is not required if the coating is applied and maintained properly.

3.4 Interior Dry Structural

- 3.4.1 Install a new 24-inch diameter, pressure style manway in the tower bowl or drywell tube at the direction of the engineer. This will improve the ventilation during reconditioning and bring the tank into compliance with OSHA Confined Space Entry requirements. This manway should be located 180 degrees from the existing manway and include a ladder from the top platform to the bowl for safe access. Refer to KLM Drawing No. 26.
- 3.4.2 Install ports in the center of each of the two (2) platform floors, including the condensate ceiling, to facilitate containment during the next reconditioning. See photos 7 and 8, and KLM Drawing No. 52.

3.5 Interior Dry Coating

- 3.5.1 The interior dry coating is in good to excellent condition, with coating failures limited to areas susceptible to condensation, such as the drywell tube and bowl (sweating areas), and the platform floors. The coating in the remainder of the dry area is in good condition with minimal failures observed. The coating in the sweating areas is not repairable and should be replaced at the same time of the interior wet coating replacement within one (1) to two (2) years. See photos 2 through 10.

3.6 Exterior Structural

- 3.6.1 Replace the lid at the top of the drywell tube with an aluminum lid. The existing lid opens with difficulty and is a safety hazard. This will facilitate opening the lid from the underside. Install a locking hasp on the inside of the lid for security. See photo 22.
- 3.6.2 Install anchor points on the exterior (roof side) of the drywell tube for securing safety harnesses with lanyards during egress from the drywell and transitioning from the drywell tube safety climb device to the tower roof.

- 3.6.3 Replace the tank vent/finial with a 24-inch diameter pressure pallet style, removable top mushroom vent, similar to the one shown on KLM Drawing No. 37. See photo 22. 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.
- 3.6.4 Install one (1), 24-inch diameter round, hinge covered, roof ventilation manway, approximately 180 degrees from the existing roof manway. 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. 25.
- 3.6.5 Remove and replace the 13-foot diameter roof handrailing with an OSHA approved 16-foot diameter handrail. This will facilitate enough room for the telecommunication equipment and allow safe access around the vent and manway(s).

3.7 Exterior Dry Coating

- 3.7.1 Due to age and testing data, the exterior coating is marginally considered repairable and should be replaced in its entirety at the same time as interior coating replacement within one (1) to two (2) years. See photos 11 through 15 and photos 21 through 23.

3.8 Site And Environmental Considerations

- 3.8.1 The area around the tank should be graded to drain standing water away from the support columns and wet riser foundation. The top of the foundations should be at least 6 inches above grade and slope away from the foundations. The cost of this item is not included in the Engineer's Cost Estimate.

3.9 Telecommunications Considerations

- 3.9.1 Due to the tower having some telecommunications equipment, including antennas, coaxial cables, support brackets and other miscellaneous equipment, some upgrades will be required to the tower. 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.

At a minimum upgrades will consist of;

- a. Removing the expanded brackets in the drywell tube and installing permanently mounted brackets similar to KLM drawing 42. See photo 2.

- b. Install penetrations at the top of the drywell tube. After rerouting coaxes, repair the resulting holes in the drywell tube curb by welding and grinding. See photo 22.
- c. Seal weld the existing messenger pipe to the cone and riser. Remove the existing bolts and repair the resulting holes. See photos 8 through 10.
- d. Remove the coaxes from the electrical conduit and route onto a messenger pipe. See photos 2 and 6.
- e. Raise the aviation obstruction light on the roof handrail with similar mounts to KLM drawing 40. See photo 23.

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 Otsego 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 Otsego will have to pay for these costs themselves.

4.0 REPAIR AND RECONDITIONING OVERVIEW

KLM recommends repairs be performed within one (1) to two (2) years. An experienced tank-coating contractor with the proper crew and equipment should be able to complete the project in nine (9) weeks.

KLM ENGINEERING, INC.

Report prepared and certified by:



Rodney Ellis
Vice President/COO
NACE Certified Coatings Inspector No. 1686

Report Reviewed by:



Scott Kriese
Project Supervisor
NACE Coatings Inspector No. 11236

February 2, 2016

APPENDIX A

PHOTOGRAPHS



Photo No. 1
Overall view of tank



Photo No. 2
Overall view of drywell tube, Note; coax brackets and attachments



Photo No. 3
Bowl manway and conditions



Photo No. 4
Bowl clean out to overflow pipe



Photo No. 5
Frost free bowl drain valve and piping to be removed

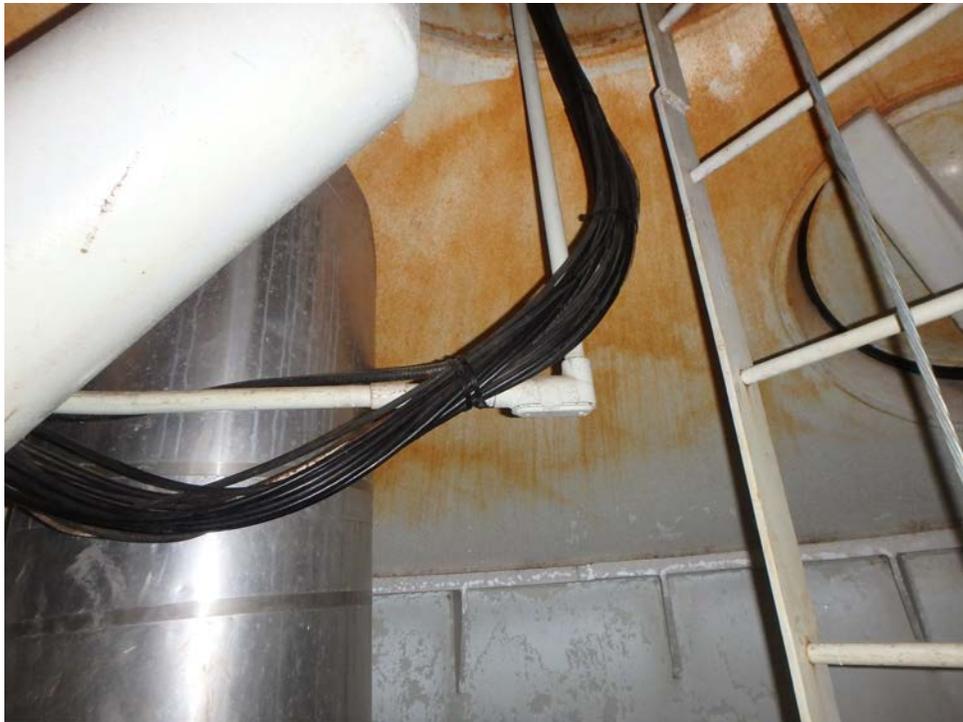


Photo No. 6
Routing of coax on electrical conduit



Photo No. 7
Condition of landing



Photo No. 8
Overall condition of riser, Note; messenger pipe bolted attachment to riser



Photo No. 9
Conditions in base cone



Photo No. 10
Messenger pipe bolted attachment



Photo No. 11
Overall condition of shell and bowl



Photo No. 12
Antenna attachment to riser



Photo No. 13
Overall condition of riser



Photo No.14
Overall condition of base cone



Photo No. 15
Overflow pipe



Photo No. 16
Tower drain valve and drain plug
(Courtesy of: KCI Report)

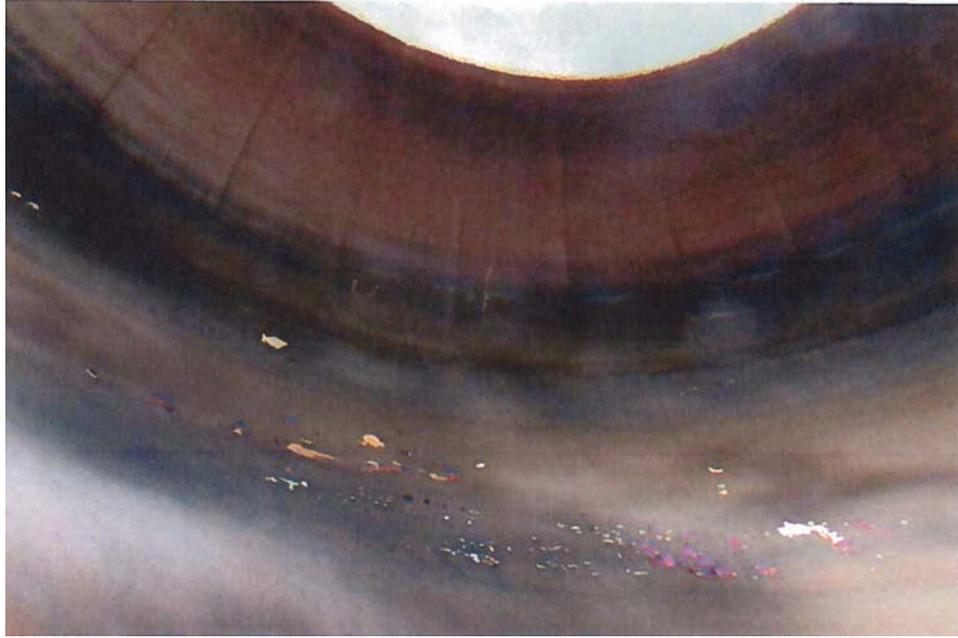


Photo No. 17
Coating failures on the interior surfaces below the High Water Line
(Courtesy of: KCI Report)

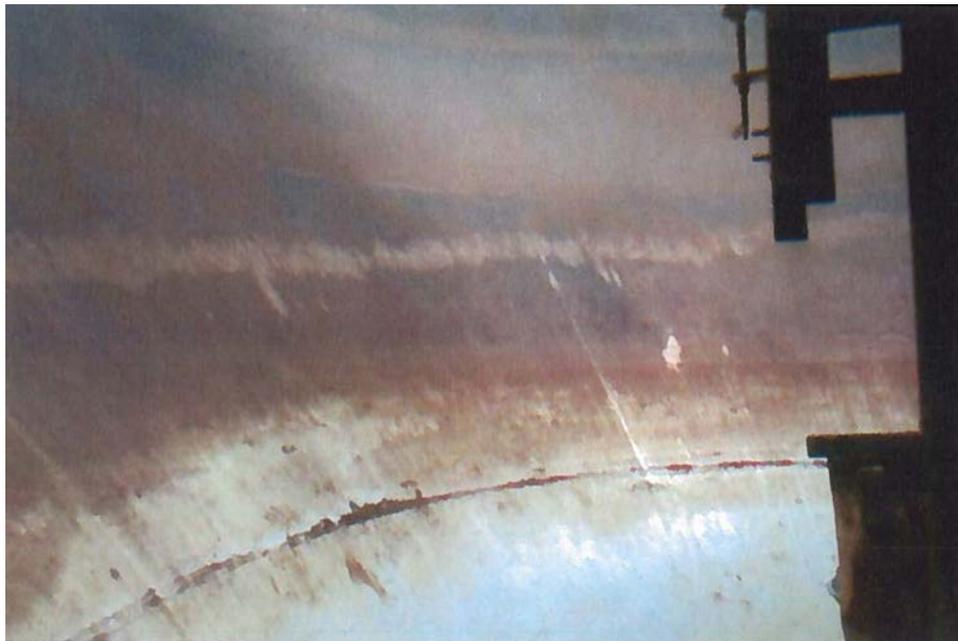


Photo No. 18
Coating failure on the bowl section
(Courtesy of: KCI Report)



Photo No. 19
Coatings failures on the exterior of the drywell tube and interior ladder
(Courtesy of: KCI Report)



Photo No. 20
Coatings failures on the cone plates
(Courtesy of: KCI Report)



Photo No. 21
Rood hand railing and coatings failures
(Courtesy of: KCI Report)



Photo No. 22
Roof access manway and tower vent/access manway
(Courtesy of: KCI Report)



Photo No. 23
Aircraft obstruction light
(Courtesy of: KCI Report)

APPENDIX B

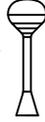
DRAWINGS



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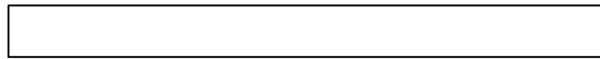
KLM PROJECT NO.	KLM DRAWING NO. 5
SUBJECT	DRAIN PLUG "T" HANDLE
DRAWN BY	DATE
CHECKED BY	DATE

"T" HANDLE

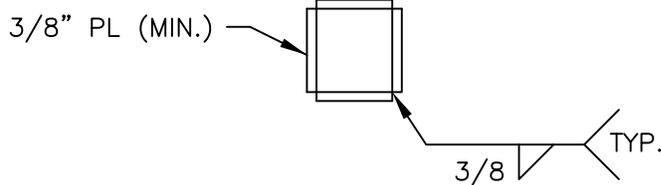
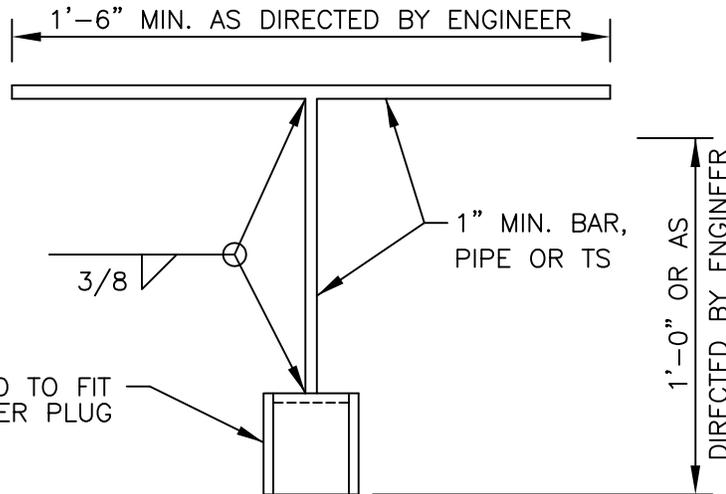
FOR THE PURPOSE OF INSTALLING AND REMOVING PLUGS.

NOTES:

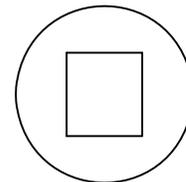
1. ALL WELDING TO BE DONE WITH E70XX ELECTRODES.
2. PRE-FABRICATED HANDLES SUBJECT TO ENGINEER'S APPROVAL
3. SEAL WELD GUSSET PLATES TO BOTH PLUG AND HANDLE ENDS AS REQUIRED.
4. THIS CONCEPTUAL DRAWING IS NOT SUITABLE FOR USE AS SUBMITTAL.



ACCEPTABLE HANDLE CONFIGURATIONS



PLUG END - OPTION 1
(FABRICATED)



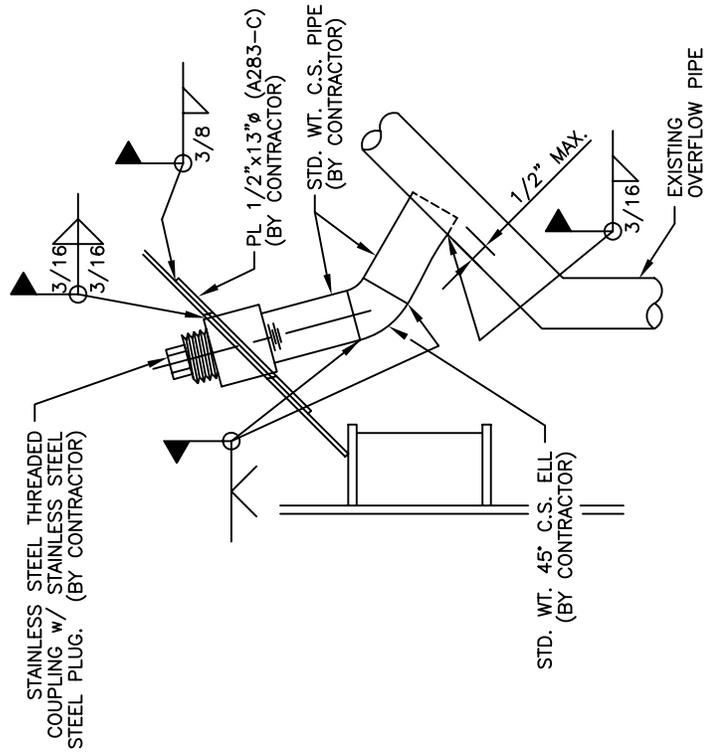
PLUG END - OPTION 2
(CAST)

INSTALLATION PROCEDURE:

1. REMOVE NEW STAINLESS STEEL PLUG FROM STAINLESS STEEL COUPLING AND REPLACE WITH A CARBON STEEL PLUG.
2. INSTALL NEW STAINLESS STEEL COUPLING ASSEMBLY.
3. CARBON STEEL PLUG TO REMAIN IN COUPLING UNTIL WELDING, SANDBLASTING AND PAINTING HAVE BEEN COMPLETED.
4. AFTER COATING HAS BEEN APPROVED AND ACCEPTED, REPLACE THE CARBON STEEL PLUG WITH THE STAINLESS STEEL PLUG USING AN ANTI-SIEZE COMPOUND SUCH AS NEVER-SEEZ, OR AN APPROVED EQUAL TO BE USED WITH POTABLE WATER.

NOTES:

1. ALL WELDING TO BE DONE WITH E70XX ELECTRODES.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
3. NO WELD SPLATTER OR COATING SHALL BE ALLOWED ON THE STAINLESS STEEL PLUG.



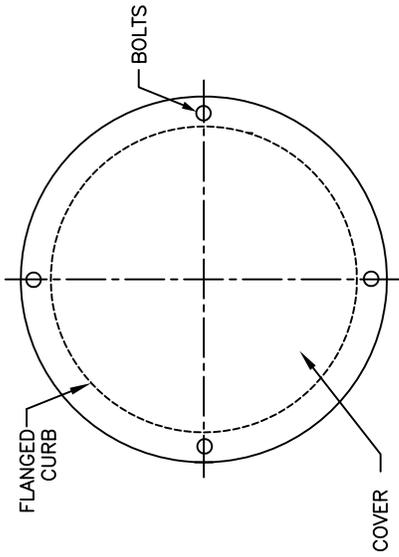
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DRAIN MOD. - SPHER. CONE BOWL

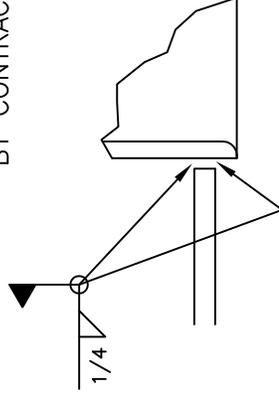
KLM PROJECT NO.	
KLM DRAWING NO.	23

NOTES:

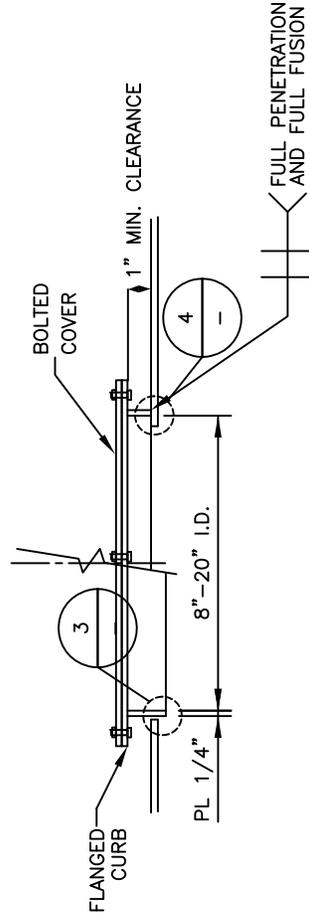
1. METHOD AND MATERIALS OF CONSTRUCTION ARE AT FABRICATOR'S OPTION, BUT MUST MEET REQUIREMENTS OF LATEST EDITION OF AWWA.
2. ALL WELDING TO BE DONE WITH E70XX ELECTRODES.
3. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



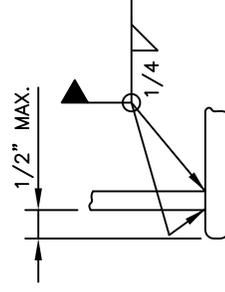
1 PLAN VIEW



3 DETAIL-OPTION 1



2 SECTIONAL ELEVATION



4 DETAIL-OPTION 2

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PLATFORM FLOOR
CONTAINMENT PORT

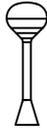
KLM PROJECT NO.	
KLM DRAWING NO.	52



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KLM PROJECT NO.

KLM DRAWING NO. 19

SUBJECT PIPE STYLE ROOF HANDRAIL CENTER DRYWELL

DRAWN BY

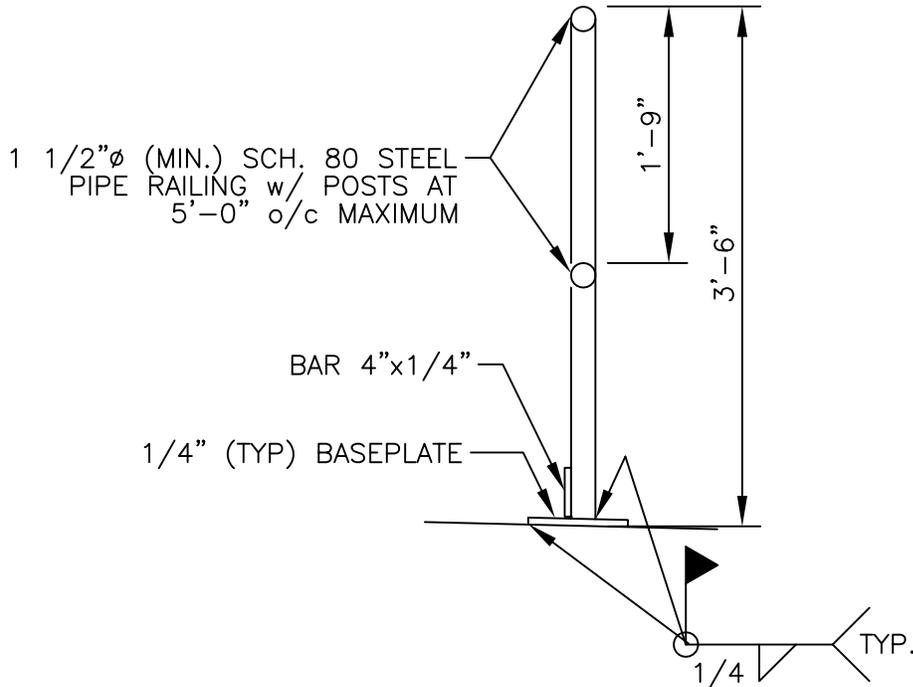
DATE

CHECKED BY

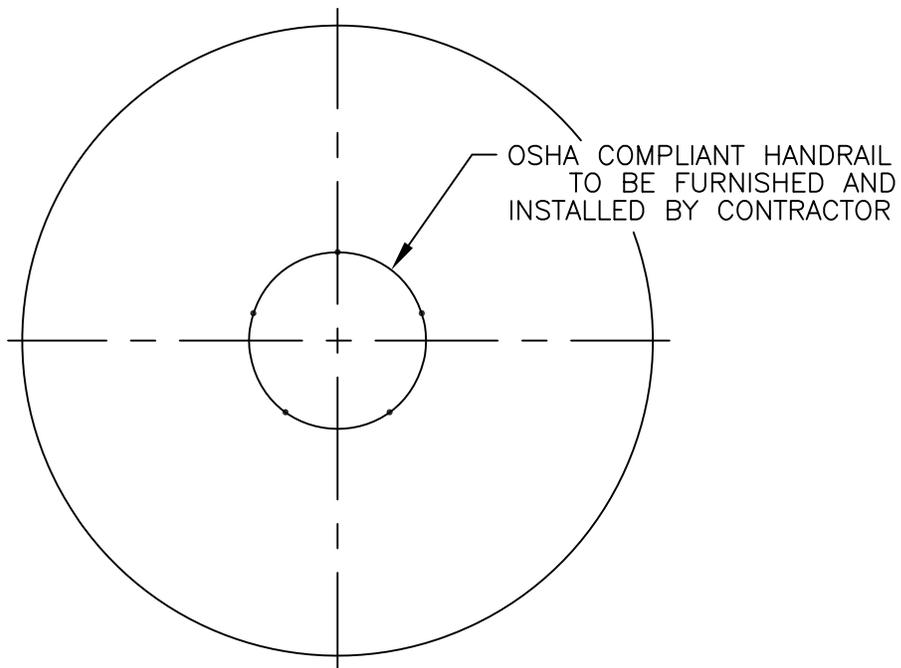
DATE

NOTES:

1. ALL WELDING TO BE DONE WITH E70XX ELECTRODES.
2. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



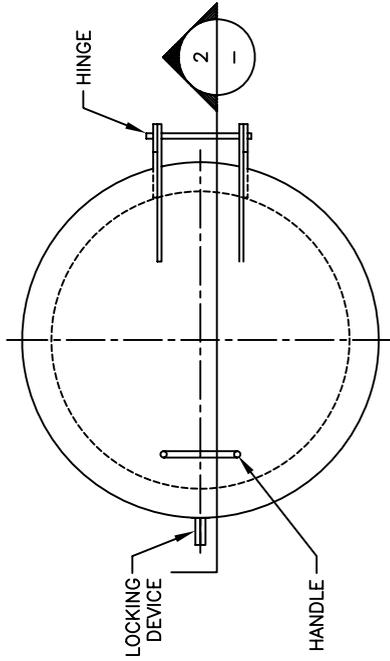
SECTION THRU HANDRAIL



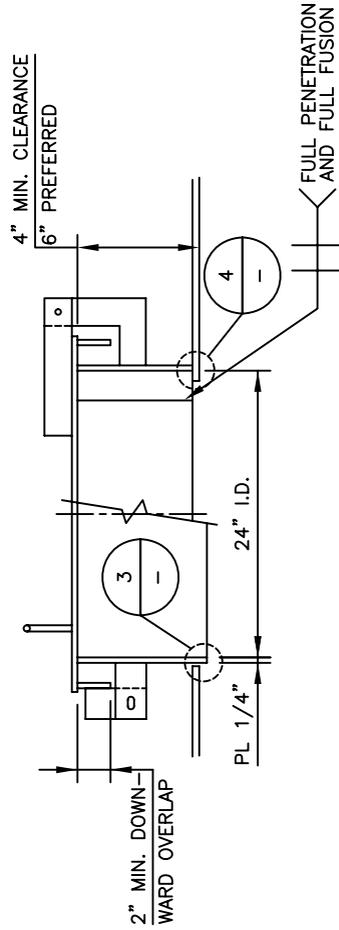
ROOF PLAN VIEW

NOTES:

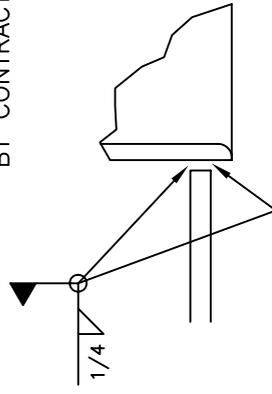
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2. ALL WELDING TO BE DONE WITH E70XX ELECTRODES.
3. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.



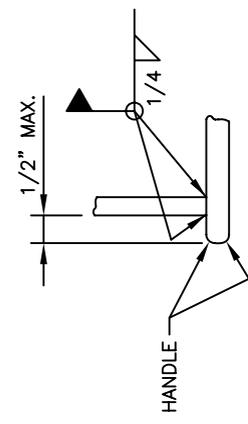
1 PLAN VIEW



2 SECTIONAL ELEVATION



3 DETAIL-OPTION 1



4 DETAIL-OPTION 2

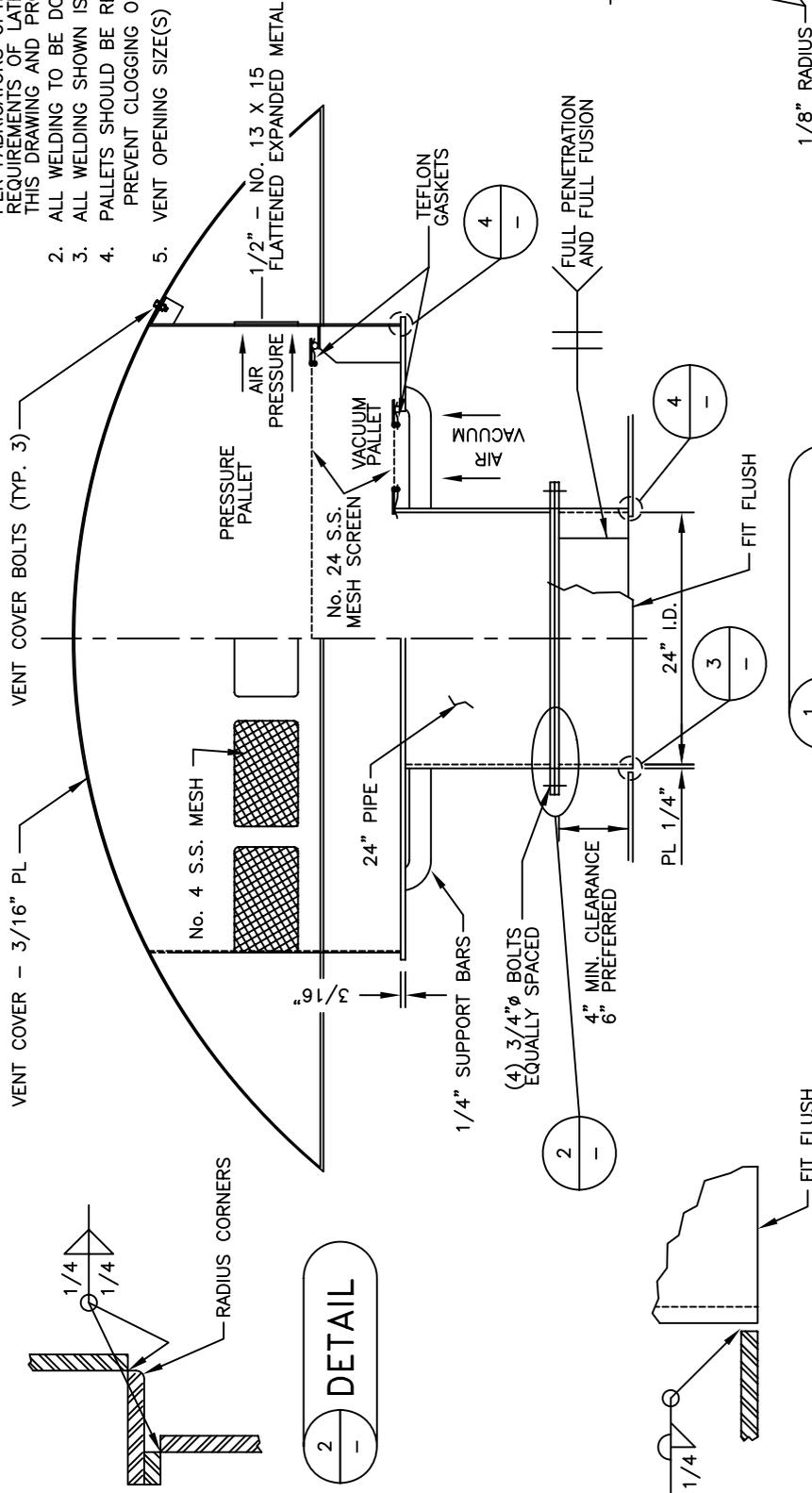
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24" ϕ VENTILATION ROOF MANWAY

KLM PROJECT NO.	
KLM DRAWING NO.	25

NOTES:

1. METHOD AND MATERIALS OF CONSTRUCTION ARE PER FABRICATORS OPTION BUT MUST MEET REQUIREMENTS OF LATEST EDITION OF AWWA, THIS DRAWING AND PROJECT SPECIFICATION.
2. ALL WELDING TO BE DONE WITH E70XX ELECTRODES.
3. ALL WELDING SHOWN IS TO BE DONE BY CONTRACTOR.
4. PALLETS SHOULD BE REMOVED DURING PAINTING TO PREVENT CLOGGING OF THE S.S SCREENS
5. VENT OPENING SIZE(S) PER SPECIFICATIONS



2 —
DETAIL

1 —
ELEVATION

3 —
DETAIL—OPTION 1

4 —
DETAIL—OPTION 2

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FROST-FREE ROOF VENT

KLM PROJECT NO.
 KLM DRAWING NO. 37

APPENDIX C

SURFACE PREPARATION REQUIREMENTS



Standard Practice

Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service

This NACE International standard represents a consensus of those individual members who have reviewed this document, its scope, and provisions. Its acceptance does not in any respect preclude anyone, whether he or she has adopted the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not in conformance with this standard. Nothing contained in this NACE International standard is to be construed as granting any right, by implication or otherwise, to manufacture, sell, or use in connection with any method, apparatus, or product covered by Letters Patent, or as indemnifying or protecting anyone against liability for infringement of Letters Patent. This standard represents minimum requirements and should in no way be interpreted as a restriction on the use of better procedures or materials. Neither is this standard intended to apply in all cases relating to the subject. Unpredictable circumstances may negate the usefulness of this standard in specific instances. NACE International assumes no responsibility for the interpretation or use of this standard by other parties and accepts responsibility for only those official NACE International interpretations issued by NACE International in accordance with its governing procedures and policies which preclude the issuance of interpretations by individual volunteers.

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NACE International
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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.

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⁽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**

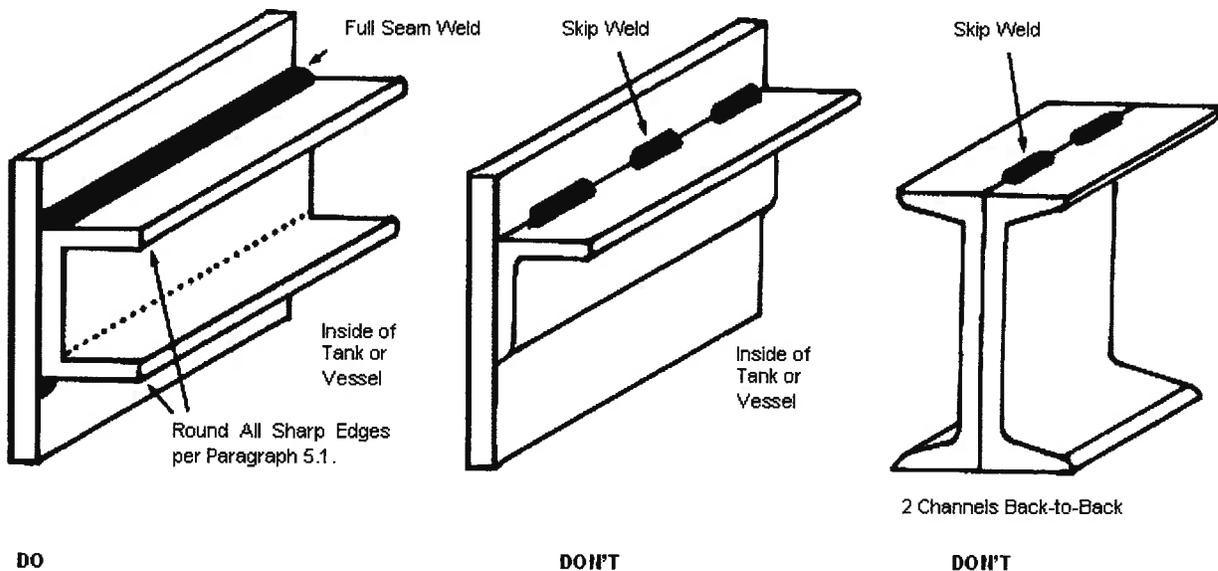


FIGURE A1

All construction involving pockets or crevices that do not drain or that cannot be properly abrasive blasted and lined shall be avoided.

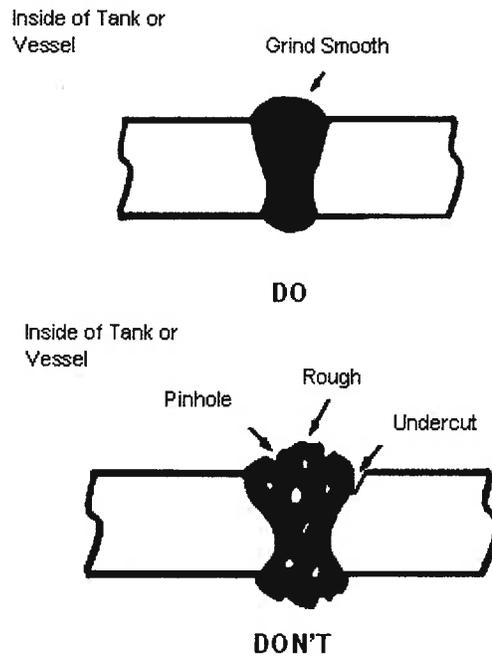


FIGURE A2

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.

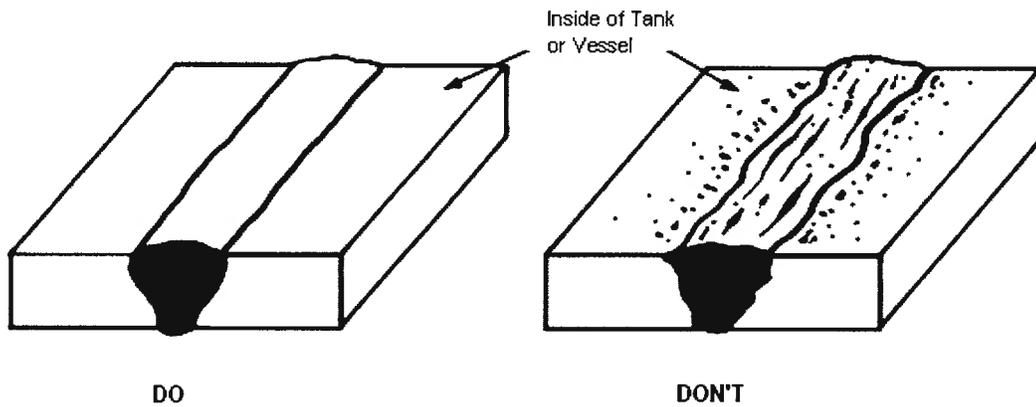


FIGURE A3

All weld spatter shall be removed.

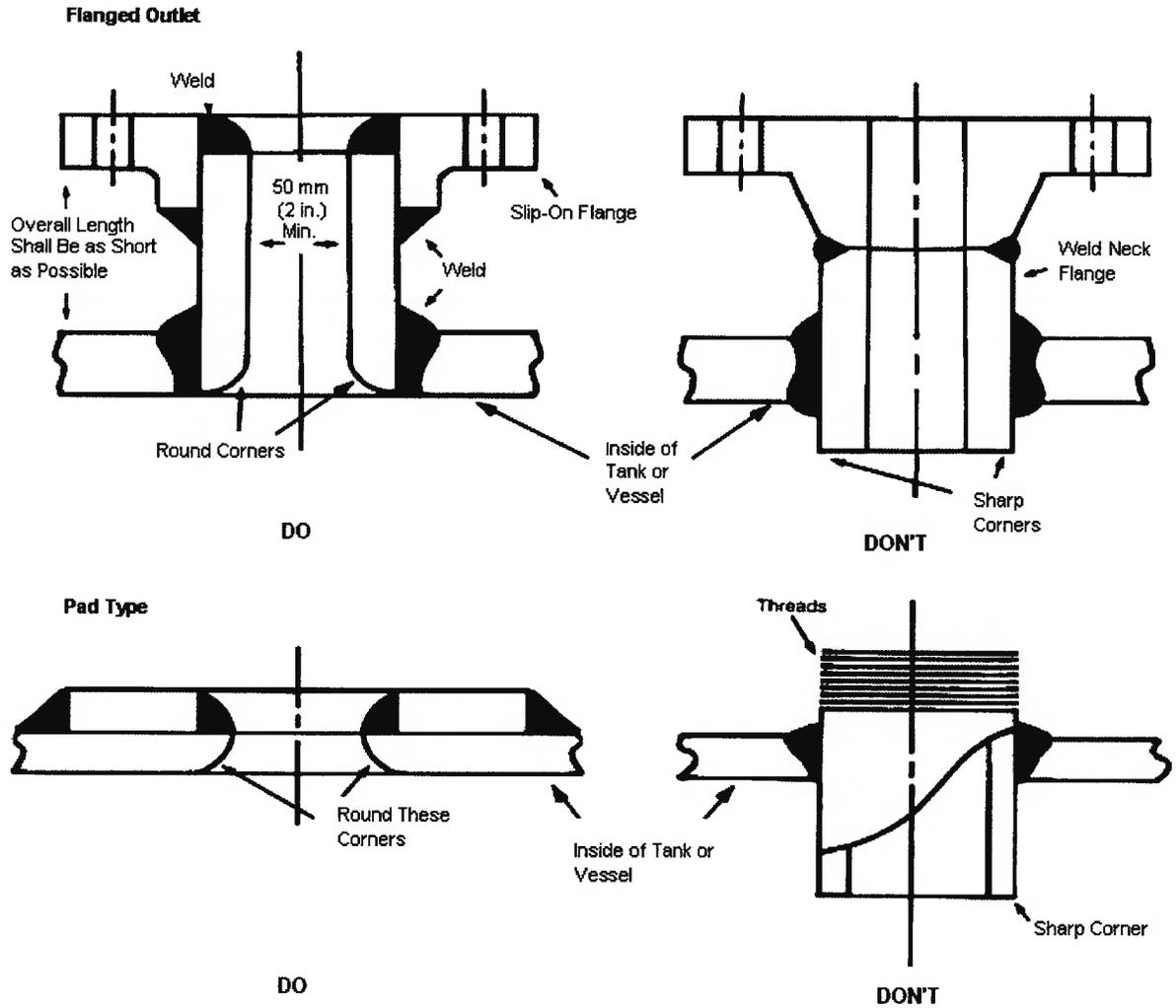


FIGURE A4

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.

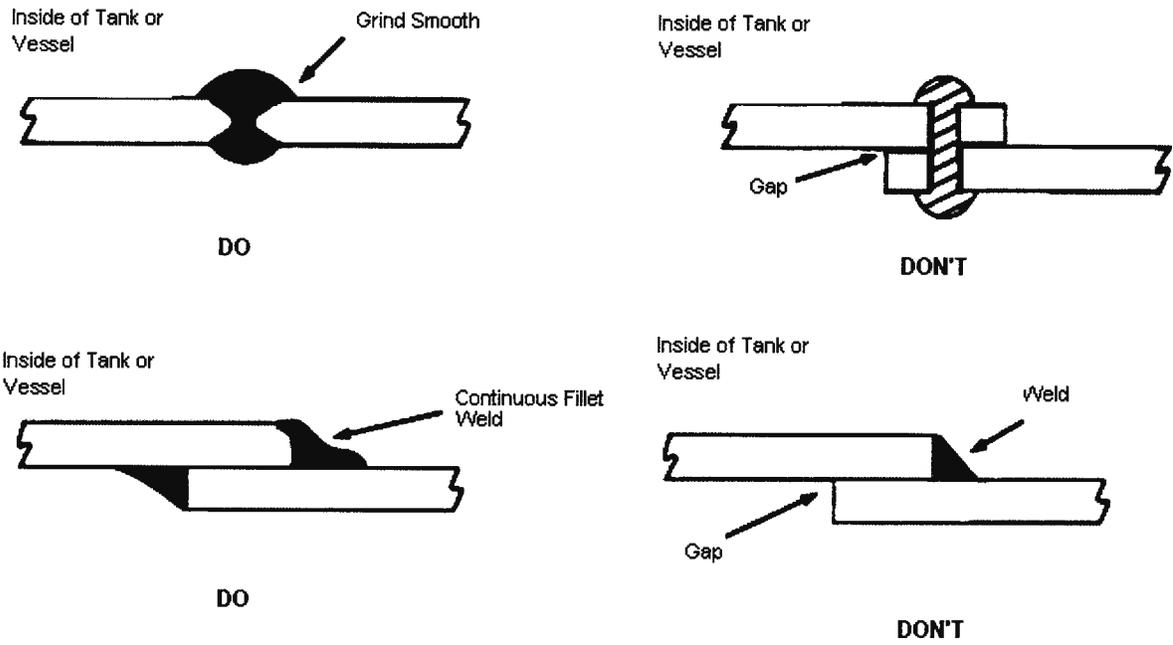


FIGURE A5

Butt welding shall be used whenever possible rather than lap welding or riveted construction.

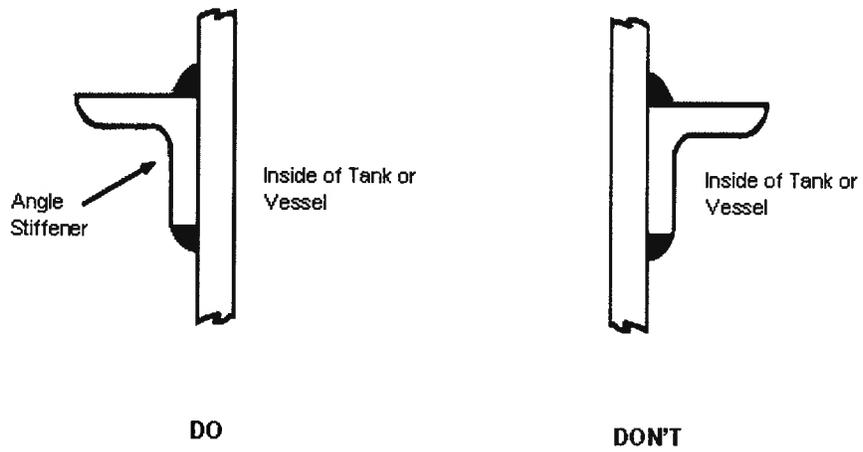


FIGURE A6

Stiffening members should be on the outside of the tank or vessel.

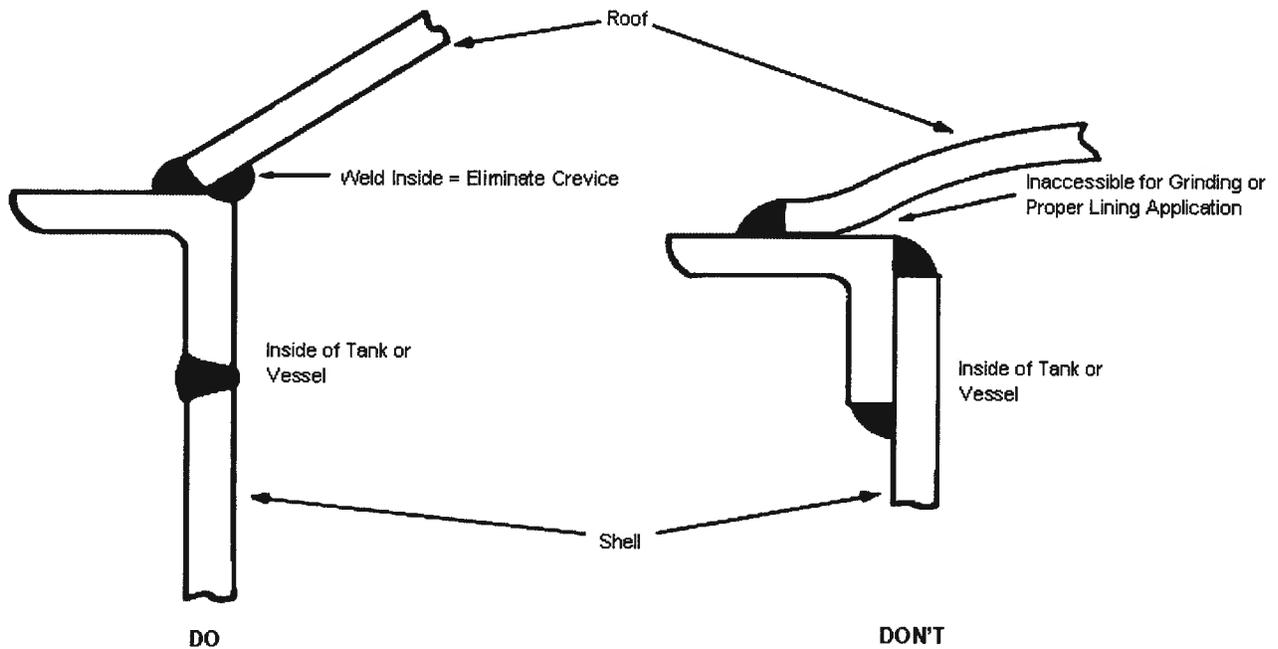


FIGURE A7

Roof-to-Shell Joint. Eliminate crevice and lap weld at roof-to-shell joint in a tank or nonpressure vessel.

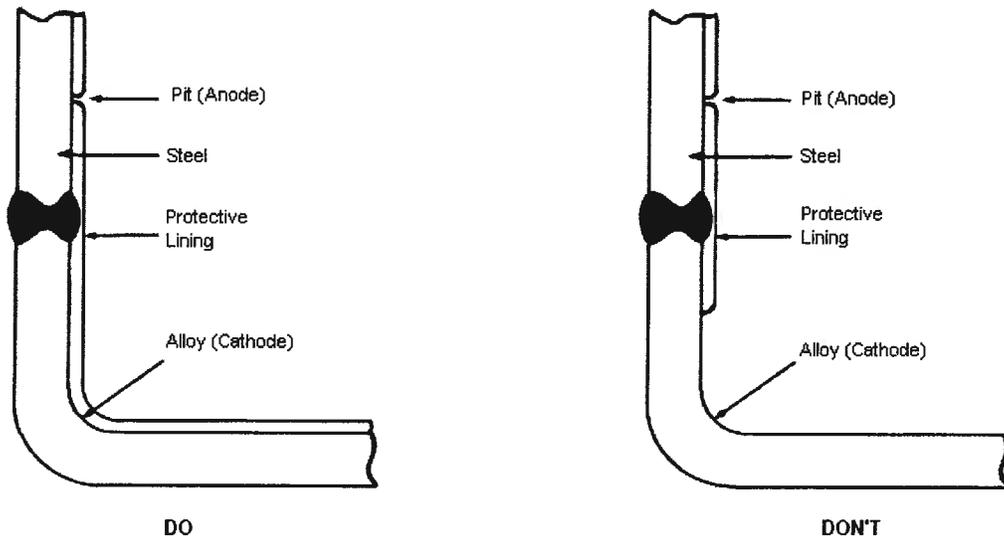


FIGURE A8

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.

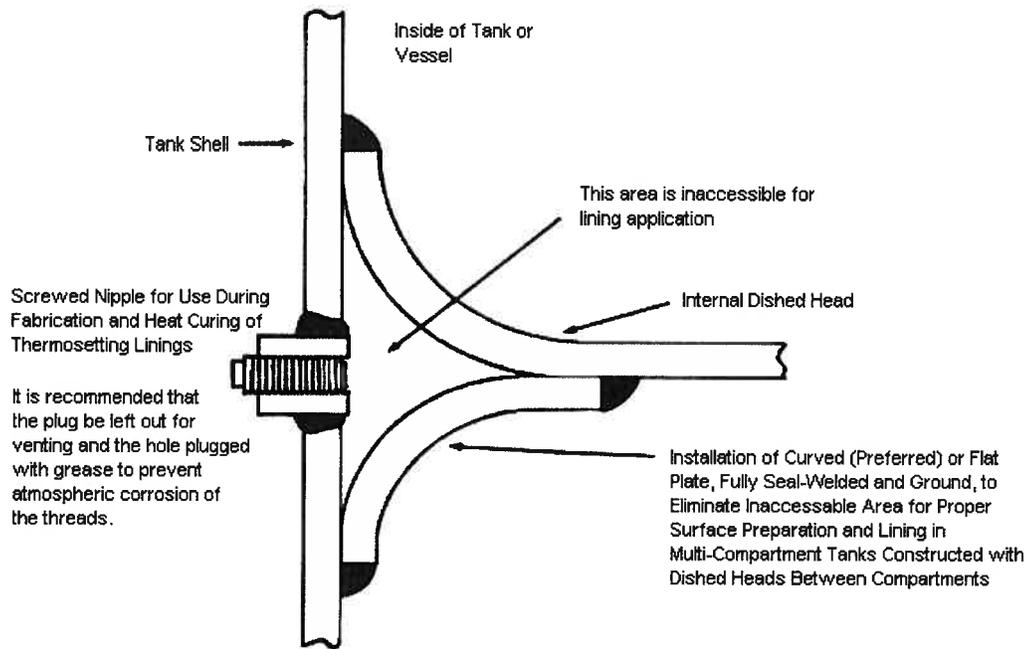


FIGURE A9

A technique (detail of fabrication) to allow for good continuity of lining application for inaccessible areas such as those in multicompart tanks or vessels.

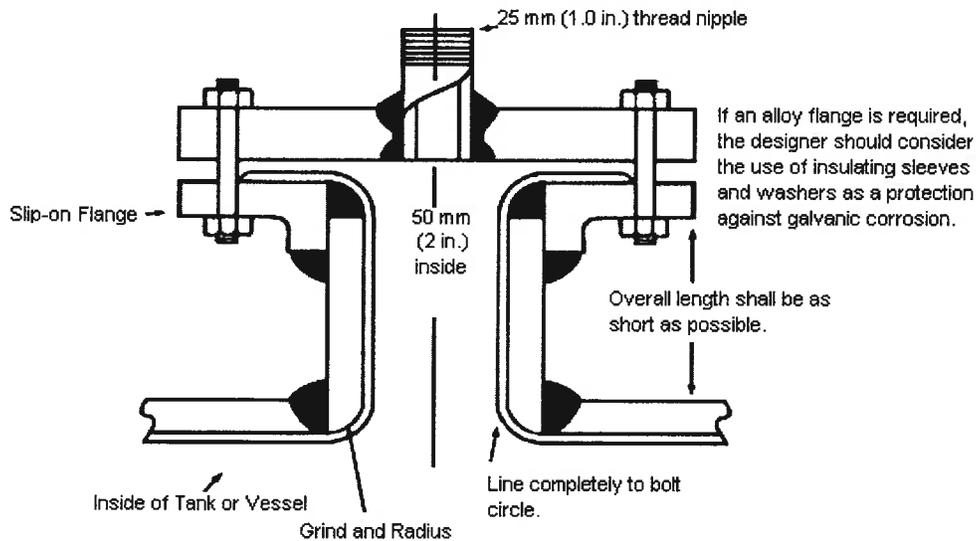


FIGURE A10

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.

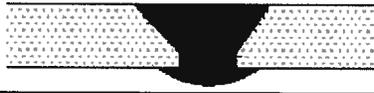
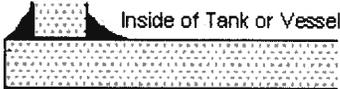
B1.5 Responsibilities of the Lining Applicator

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.

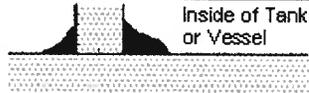
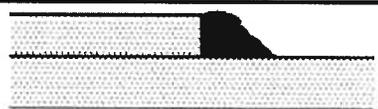
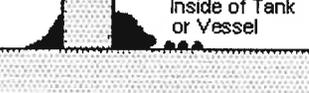
Appendix C—Written and Graphic Descriptions of Various Degrees of Surface Finishing of Welds That May Be Specified in Preparation for Lining of Tanks and Vessels^(A)

NACE Weld Preparation Designation	Type of Grinding	Butt Weld	Fillet Welded Tee Joint	Lap Weld
A	Ground flush and smooth; free of all defects. ^(B)	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
			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
			Not Applicable	Not Applicable
C	Ground smooth; free of all defects. ^(B)	Weld spatter is removed and all surface imperfections are repaired as necessary. The weld is ground smooth and blended into the plate surfaces.	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.
				

^(A) 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. ⁽²⁾	Minor imperfections such as porosity and undercutting exist. Weld spatter is removed; welds are then ground smooth and blended into the plate surfaces.	Minor imperfections such as porosity and undercutting exist. Weld spatter is removed; welds are then ground smooth and blended into the plate surfaces.	Minor imperfections such as porosity and undercutting exist. Weld spatter is removed; welds are then ground smooth and blended into the plate surfaces.
				
E	Minimal	Sharp projections on the weld bead, slag, and weld spatter are removed.	Sharp projections on the weld bead, slag, and weld spatter are removed.	Sharp projections on the weld bead, slag, and weld spatter are removed.
				
Weld Condition Prior to Finishing				

⁽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.

⁽²⁾ 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).

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APPENDIX D

INSPECTION AND EVALUATION METHODS

INSPECTION AND EVALUATION METHODS

Some or all of the following procedures were performed as applicable.

1.0 Methods

- 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.
- 1.2 Tank plate thickness was measured at random locations on the liquid holding shell. The overall structural condition of the tank was visually examined.
- 1.3 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.
- 1.4 Although compliance with OSHA regulations was not a part of this inspection, any unsafe conditions or violations of current OSHA regulations that were observed are noted in this report.

2.0 Examination and Evaluation Techniques

Some or all of the following procedures were performed as applicable.

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.

2.2 Foundations

The tank concrete foundation(s) were/was visually examined for cracks, spalling, condition of grout, indications of distress/settlement, and elevation above grade.

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.

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.

2.5 Coating Adhesion

Adhesion testing of the coating to the steel was performed by ASTM D3359: Shear Adhesion Test, Measuring Adhesion by Tape Test. In addition, a subjective coating adhesion evaluation was performed using a penknife.

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.

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 contaminants, 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.

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

LOGO AND LETTERING DETAILS



CITY OF
Otsego
MINNESOTA