

DETAILED TECHNICAL SPECIFICATIONS

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Repairing and Repainting the Interior and Exterior of One 5,000,000 Gallon Steel Ground Storage Tank “Copeland Park Tank” Newport News, Virginia

A. Description of Tank

The 5,000,000 gallon steel ground storage tank is located near the intersection of Chestnut Avenue and Mercedes Drive in Newport News, Virginia. The tank is approximately 17 ft to top capacity level, and approximately 225 ft in diameter. The tank is of welded steel construction and has a column-and-rafter supported roof with a sphericon knuckle. The tank was erected by Chicago Bridge & Iron Company in 1965 under contract number 9-3411.

B. Scope of Work

Bids will be solicited for the complete cleaning and repainting of the tank on the interior surfaces, and the complete cleaning and repainting of the exterior surfaces with containment. Additional Work items include: repair of concrete and grout; grinding of bottom plate edge; furnishing and installation of two new roof manholes, roof safety railings, clog-resistant roof vent, and new cathodic protection system; modification of the platform safety railing; including other miscellaneous repairs and incidental items such as coordination with the OWNER, first anniversary evaluation, disposal of debris, site restoration, etc. The above description shall serve as general information only and shall not be construed to limit the contractor's responsibility or obligation to comply with the Contract Documents and Detailed Technical Specifications. The Bidder is referred to the following Detailed Technical Specifications for the complete scope of Work.

C. Definition of Parties

The term OWNER in this specification shall mean the Newport News Waterworks, 700 Town Center Drive, Suite 400, Newport News, Virginia 23606.

The term PROJECT REPRESENTATIVE in this specification shall mean Mr. Scott Dewhirst, Newport News Waterworks, 437 Waterworks Way, Newport News, Virginia 23608, telephone 757/234-6776, FAX 757/234-6742.

The term ENGINEER in this specification shall mean Tank Industry Consultants - Headquarters: 7740 West New York Street, Indianapolis, Indiana 46214-2988, telephone 317/271-3100, FAX 317/271-3300; and East Regional Office: 1554 Paoli Pike #324, West Chester, Pennsylvania 19380, telephone 610/696-0403, FAX 610/696-0403.

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The term FIELD OBSERVER in this specification shall mean Tank Industry Consultants - Headquarters: 7740 West New York Street, Indianapolis, Indiana 46214-2988, telephone 317/271-3100, FAX 317/271-3300; East Regional Office: 1554 Paoli Pike #324, West Chester, Pennsylvania 19380, telephone 610/696-0403, FAX 610/696-0403; or another designated representative of the OWNER.

The term CONTRACTOR'S COMPETENT PERSON(S) in this specification shall mean a representative of the CONTRACTOR who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. The name(s) of the CONTRACTOR'S COMPETENT PERSON(S) shall be submitted for review prior to performing any Work.

D. Evaluation Report and Site Inspection by Bidder

A Summarized Tank Information Sheet shall be made available to all Bidders and is attached at the end of these specifications. An evaluation report of the 5,000,000 gallon steel ground storage tank dated May 24-27, 2005, complete with color photographs, may be reviewed at the office of the PROJECT REPRESENTATIVE; or at the office of the ENGINEER, by appointment. Interpretation of this data is the responsibility of the Bidder. Although reasonable care was used in making and reporting this evaluation and the Summarized Tank Information Sheet, conditions may be encountered which vary from those as reported therein. **Submitting a Bid on the forms bound with the Contract Documents shall acknowledge that the tank and site have been inspected by the Bidder and the evaluation report has been reviewed by the Bidder or that the right to do so has been waived.** Persons desiring to access the tank must provide evidence of insurance coverage to the OWNER as outlined in the Contract Documents. The interior will not be available for access by the Bidder.

E. Additional Insured

The CONTRACTOR shall list 1) Newport News Waterworks; 2) Tank Industry Consultants; and each of their officers, agents, and employees as additional insured on all insurance policies (except worker's compensation and employers' liability) and coverage which are required by the OWNER as specified in the Contract Documents.

F. General Specifications for Repairing and Repainting the Tank

1. Submittals: Five sets of Submittals shall be submitted to the ENGINEER for review at least two weeks prior to performing any Work. Submittals shall at a minimum include the items listed on the Submittal Check List included with these Specifications. A separate cover sheet such as the form bound in these Specifications, including the Item Number from the Submittal Check List, the Specification Section of reference for each submittal, and a brief

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description of each submittal included, shall be provided by the CONTRACTOR for each separate item submitted. Review of these submittals shall not relieve the CONTRACTOR from responsibility for compliance with the specifications or for the adequacy of the repair, cleaning, and/or painting methods. The CONTRACTOR shall incorporate the submittal review process time and make the necessary scheduling adjustments so that completion of the Work within the Contract Time is not affected.

2. Repair Standards: All design and repairs shall be in accordance with the local building code. All design and welding shall be done in accordance with AWWA D100-05 Standard for Welded Steel Tanks for Water Storage. Where tolerances, stresses, details, and modifications are not limited or provided by the AWWA Standard, the applicable sections of the following American Petroleum Institute (API) Standards shall apply. Unless otherwise specified, all steel structural and bar components shall be fabricated from new ASTM A-36 material, all steel plate components shall be fabricated from new ASTM A-36 material, and all steel pipe shall be fabricated from new ASTM A-53 material.
 - a. API Standard 650, 11th Edition (Addendum 1 – November 2008) – “Welded Steel Tanks for Oil Storage”
 - b. API Standard 653, 3rd Edition (Addendum 3 – February 2008 and Errata – April 2008) – “Tank Inspection, Repair, Alteration, and Reconstruction”

3. Painting Standards: All Work shall be done in accordance with the following requirements.
 - a. SSPC: The Society for Protective Coatings (SSPC)
 - (1) Steel Structures Painting Manual (Volume 1, 3rd Edition - 1993 and Volume 2, 8th Edition - 2000, including Commentary Sections and Appendices).
 - (2) SSPC-AB 1 “Mineral and Slag Abrasives”
 - (3) SSPC-AB 2 “Specification for Cleanliness of Recycled Ferrous Metallic Abrasives”
 - (4) SSPC-AB 3 “Newly Manufactured or Re-Manufactured Steel Abrasives”
 - (5) SSPC-VIS 1-02 "Visual Standard for Abrasive Blast Cleaned Steel"
 - (6) SSPC-VIS 3-93 "Visual Standard for Power- and Hand-Tool Cleaned Steel"
 - (7) SSPC-VIS 4-01 "Guide and Reference Photographs for Steel Surfaces Prepared by Waterjetting"
 - (8) SSPC-VIS 5-01 "Guide and Reference Photographs for Steel Surfaces Prepared by Wet Abrasive Blast Cleaning"

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- (9) SSPC-Guide 6 (CON) “Guide for Containing Debris Generated During Paint Removal Operations”
 - (10) SSPC-PA 2 “Measurement of Dry Paint Thickness with Magnetic Gages”
 - (11) SSPC-PA Guide 3 “A Guide to Safety in Paint Application”
 - (12) SSPC-SP 12, Surface Preparation and Cleaning of Steel and Other Hard Materials by High- and Ultrahigh-Pressure Water Jetting Prior to Recoating
 - (13) SSPC-SP 13, Surface Preparation of Concrete
 - (14) SSPC-SP 14, Industrial Blast Cleaning
 - (15) SSPC-SP 15, Commercial Grade Power Tool Cleaning
- b. American Water Works Association Standards
- (1) AWWA D100-05, Standard for Welded Steel Tanks for Water Storage
 - (2) AWWA D102-06, Standard for Coating Steel Water-Storage Tanks
 - (3) AWWA C652-02, Disinfection of Water-Storage Facilities
- c. NSF International (NSF)
- (1) ANSI/NSF Standard 61 "Drinking Water System Components - Health Effects"
- d. the paint manufacturer's published product data
- e. these Detailed Technical Specifications

The SSPC-VIS 1-02, the SSPC-VIS 3-93, and the SSPC-VIS 4-01 shall also be used taking into account staining from prior paint applications. The SSPC Standards SSPC-SP 6, Commercial Blast Cleaning and SSPC-SP 10, Near-White Blast Cleaning shall be modified to apply to each square inch instead of the approximately 9 square inch area indicated in paragraph 2.6 of each of these standards and shall be referred to hereinafter as SSPC-SP 6, Commercial Blast Cleaning (modified) and SSPC-SP 10, Near-White Blast Cleaning (modified). Where the foregoing standards, recommendations, and specifications are conflicting, said conflicts shall be brought to the attention of the ENGINEER. Manufacturer's published product data shall be adhered to unless changed in writing by the home office of the manufacturer.

4. Welder's Certification: All welders and welding operators shall be certified in accordance with ASME, Section IX or AWS D1.1-96 (tests as described in AWS B2.1) to the procedures and processes required to accomplish the Work. Welder's certification papers

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shall be furnished to the FIELD OBSERVER for review prior to the commencement of welding on the tank.

5. Verification of Dimensions: CONTRACTOR shall verify all dimensions prior to fabrication or ordering any materials or parts needed for this Project. No additional compensation will be made to the CONTRACTOR for items that have to be modified, cut, or replaced because of inadequate dimensions used in ordering or fabricating items.
6. Subcontracting: Subcontracting of the cleaning and/or painting shall not be allowed. If a SUBCONTRACTOR is used for other Work, the name and address of the proposed SUBCONTRACTOR shall be stated in the **Bid Form**.
7. Schedule Submittal: Within 10 calendar days after receipt of the Notice to Proceed and prior to starting the Work, the CONTRACTOR shall submit a bar chart or progress schedule indicating the anticipated schedule of the following functions:
 - a. move onto site and rig tank, including containment
 - b. repair Work (concrete and steel)
 - c. cleaning and priming interior surfaces
 - d. finish painting interior surfaces
 - e. cleaning and priming exterior surfaces
 - f. intermediate painting exterior surfaces
 - g. finish painting exterior surfaces
 - h. tank disinfection
 - i. site clean-up.

Also indicated on the bar chart or progress schedule shall be the anticipated progress payment schedule of values. The bar chart and payment request schedule shall be updated monthly and submitted with the payment request. **No separate payment shall be made for bonds, insurance, design, drawings, mobilization, containment of the cleaning and/or painting debris, or paint materials not incorporated into the Work.**

8. Notification: The CONTRACTOR shall notify the OWNER and the ENGINEER at least seven (7) days before starting the Work at the site. The CONTRACTOR shall reconfirm the commencement of Work with the OWNER and ENGINEER twenty-four (24) hours prior to starting Work at the site.
9. Work Schedule: The repairing, cleaning and painting of the tank shall be accomplished in such a way as to minimize the length of time the tank is out of service and to minimize the number of days required for observing the repairing, cleaning and painting operations. **The CONTRACTOR'S attention is directed to the Agreement concerning Contract Time and Liquidated Damages.**
10. Times for Work: No repairing, cleaning or painting is to be done in the night period between sunset and sunrise as noted in the General Conditions. The times for Work shall

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also comply with local, state, and federal regulations and laws regarding days of week, noise, and interference with activities of surrounding property owners. The following exceptions may apply:

- a. Repair Work: Should tank interior temperatures be excessive for personnel welfare during daylight hours or should other job conditions make nighttime Work beneficial to the CONTRACTOR and OWNER, written permission may be granted by the ENGINEER and OWNER to conduct repair Work at night. This permission shall only be granted if the CONTRACTOR provides the proper lighting and safety equipment and informs the neighboring occupants and property owners.
 - b. Cleaning and Painting Work: Should tank interior temperatures be excessive for paint application or personnel welfare during daylight hours or should other job conditions make nighttime Work beneficial to the CONTRACTOR and OWNER, written permission may be granted by the ENGINEER and OWNER to conduct Work at night. This permission shall only be granted if the necessary steel temperature, air temperature, humidity and dew point conditions are present and recorded during the application and initial drying or curing of the coatings. Also, the CONTRACTOR must provide the proper lighting and safety equipment and informs the neighboring occupants and property owners.
11. Tank Empty for Painting: The tank shall be drained during all surface preparation, application, and curing of the coating.
 12. Operation of Valves and Equipment: All operations which would include closing valves, switching, starting, stopping, or removal from service of any equipment shall be done by the OWNER'S personnel. If the CONTRACTOR desires the OWNER to close valves, operate switches, start, stop, or remove any equipment from service, the CONTRACTOR shall submit a written request to the OWNER, and if the OWNER determines that such action will not adversely affect the operations of the OWNER to provide water, then the OWNER may close valves, operate switches, start, stop, or remove the equipment from service. Such requests shall be directed to the PROJECT REPRESENTATIVE so interruptions, if any, of the OWNER'S operations or systems will be no longer than necessary. The CONTRACTOR shall have a full complement of personnel working on a daily basis until the Work causing the interruption is completed. All Work performed under this Agreement shall be performed in close cooperation with the OWNER.
 13. Site Security: When not working on the tank or site (such as during the evening, weekends, holidays, or rain days), the CONTRACTOR shall secure all openings in the tank (greater than 8 in.) and access or rigging devices. Openings in the tank needed during ventilation of the tank shall be secured with bars, grating, or other means to allow sufficient air flow through the opening. The CONTRACTOR shall lock the site fence to prevent unauthorized personnel from gaining access to the site, the interior of the tank, and the CONTRACTOR'S equipment and supplies. The CONTRACTOR shall be solely responsible for the security of the site, tank, equipment, and supplies during both working and non-working hours.

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14. Public Safety: CONTRACTOR shall protect the public from harm caused by the CONTRACTOR'S actions and performance of the work. Prior to start of work or mobilization on site, the CONTRACTOR shall submit a site-specific Public Safety Plan based on the CONTRACTOR'S selected work methods. The Public Safety Plan shall include necessary plans and procedures to protect the general public from harm. The Plan should include such items, but not be limited to, requirements for safety exclusion zones, warning sign type and placements, protective barriers, safety and warning devices, devices for daylight and nighttime protection, and all devices required by state and local requirements. CONTRACTOR shall include a site plan summarizing the requirements of the Public Safety Plan for the specific work on the tank. CONTRACTOR'S Plan shall include the name of the Competent Person responsible for enforcing the Public Safety Plan.
15. Traffic Control Plan: The CONTRACTOR shall permit traffic to pass around the Project site with the least possible inconvenience or delay. The CONTRACTOR shall maintain existing roads and streets within the Project limits, keeping them open, and in good, clean, and safe condition at all times. If any traffic lane closures are necessary, the CONTRACTOR shall provide all flaggers, signs, and other traffic control devices necessary to warn and protect the public at all times from injury or damage as a result of the CONTRACTOR'S operations that may occur on highways, roads, and streets. The CONTRACTOR shall submit a traffic control plan. If no disruption of traffic is anticipated, then the CONTRACTOR shall submit a statement indicating this.
16. Water Supply: Water for the purpose of this contract, other than filling the tank upon completion, must be obtained by the CONTRACTOR through direct local arrangements with the OWNER. The CONTRACTOR shall furnish and install all necessary temporary piping and valves in connection with such water supply. Water shall be furnished from the OWNER at no cost to the CONTRACTOR as long as the amount of water used remains within reason. All connections to the public water system shall contain a back-flow prevention device approved by the OWNER. One tank of water for the disinfection shall be furnished by the OWNER at no charge to the CONTRACTOR. Additional water for disinfection shall be furnished at current municipal water rates charged by the OWNER and shall be paid for by the CONTRACTOR.
17. Electrical Supply: The CONTRACTOR shall pay all fees, obtain necessary permits, and have meters installed for power and lights as may be required for the prosecution of this Work. The CONTRACTOR shall furnish and install all necessary temporary service drops, wiring, connections, etc. necessary for temporary service required by the CONTRACTOR. All costs associated with any temporary electric service required by the CONTRACTOR shall be included in the Base Bid.
18. OWNER Performed Repairs: The CONTRACTOR shall cooperate with the OWNER who may be conducting other operations on or near the tank. The CONTRACTOR shall clean and paint all areas added or disturbed by the OWNER on the tank and attached accessories.

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19. Furnishing and Installation of Items: Any reference in these specifications to furnishing an item or installing an item shall mean the item shall be both furnished and installed by the CONTRACTOR, unless specifically stated otherwise. Replacement shall mean the removal and legal disposal of the existing items, and furnishing and installation of the new items specified.
20. Contractor Supervision: The CONTRACTOR shall provide a competent superintendent, satisfactory to the OWNER, for the Work at all times during working hours with full authority to act for him/her. The on-site superintendent shall not be replaced without prior written notification and written approval of the ENGINEER. The CONTRACTOR shall also provide an adequate staff for the proper coordination and expedition of his/her Work. Should, in the opinion of the OWNER, any language barrier exist between the on-site superintendent and the OWNER or FIELD OBSERVER, the CONTRACTOR shall employ a qualified full-time interpreter or provide a new on-site superintendent at no additional cost to the OWNER. The on-site superintendent shall be bi-lingual if any workers are not proficient in English.
21. Observation: The OWNER plans to engage Tank Industry Consultants or another designated representative of the OWNER, to perform full-time observation of the repair Work, cleaning, and painting. However, the OWNER reserves the right to engage only intermittent observation services. The CONTRACTOR shall notify and make available to the FIELD OBSERVER for observation of the fit-up of any new and/or replacement parts prior to welding and following post-weld cleanup. The CONTRACTOR shall notify and make available to the FIELD OBSERVER for observation all surfaces to be coated. The dry film thickness (DFT) of each coat shall be measured in accordance with SSPC Paint Application Specification No. 2 (SSPC-PA 2-97). However, if it is determined to be in the best interest of the OWNER, the FIELD OBSERVER may make DFT measurements in excess of the amounts stated in SSPC-PA 2.
22. Destructive Testing of Coatings: If disputes arise concerning the quality of the applied coatings, adhesion tests, Tooke Gage analysis, or some other form of destructive testing may be used to resolve the dispute. If it is found that such Work is defective, CONTRACTOR shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, testing, replacement, and reconstruction.
23. Accessibility for Observation: All Work shall be made accessible to the FIELD OBSERVER using the CONTRACTOR'S rigging and equipment. If assistance is required for the FIELD OBSERVER to safely access the Work, the CONTRACTOR shall furnish

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labor to assist the FIELD OBSERVER. The cost of this labor shall be included in the base contract amount.

24. First Anniversary Inspection: A First Anniversary Inspection shall be performed. The CONTRACTOR'S Performance Bond or a separate Maintenance Bond shall be in force until after any remedial work is performed. The First Anniversary Inspection as described in Section 5.2 of AWWA D102-06 shall apply. The CONTRACTOR shall perform the following duties at the First Anniversary Inspection:
- a. The CONTRACTOR shall perform the inspection, and shall furnish an experienced foreman, laborer, and rigging for the inspection.
 - b. Washout: The CONTRACTOR shall washout the interior of the container for the one year evaluation the day prior to the evaluation. All debris from the interior of the container shall be legally disposed of by the CONTRACTOR at no additional cost to the OWNER.
 - c. The CONTRACTOR shall be prepared to perform minor touch-up operations.
 - d. The CONTRACTOR shall have at least one gallon of each of the exterior primer, intermediate coating, and finish coating at the time of the inspection along with power cleaning tools and "Scotch-Brite" abrasive disks for spot cleaning.
 - e. The CONTRACTOR shall also have at least one new, unopened, quart kit of AquataPoxy A-6 Paint (manufactured by Raven Lining Systems, Tulsa, Oklahoma, telephone 800/324-2810) to touch up the interior surfaces. The FIELD OBSERVER shall determine if the coating failures are extensive enough to require the use of the specified epoxy coatings to touch up the interior surfaces.
 - f. Repairs: Spot repairs shall be made by the CONTRACTOR before returning the tank to service. Repairs requiring extensive Work and rigging may be delayed until a time mutually agreeable to the OWNER and CONTRACTOR.
 - g. Disinfection: It is the CONTRACTOR'S responsibility to flush and disinfect the tank until two consecutive satisfactory water samples (collected at least 24 hours apart) are reported from the OWNER'S selected laboratory. Method Two (Part III, Article 5, Section 12 VAC 5-590-1080, Paragraph O 1 b) or Method Three (Part III, Article 5, Section 12 VAC 5-590-1080, Paragraph O 1 c) of the Virginia Department of Health Waterworks Regulations shall be used. The OWNER shall take and send in the samples to the laboratory, but shall assume no responsibility for the sampling technique or the care of the samples. The stored tank water shall comply with current VDH and USEPA standards for organic, inorganic, and biological contaminants as influenced by the operations of the CONTRACTOR.

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- h. Costs: All costs associated with the First Anniversary Inspection, including the wash-out and disinfection, shall be included in the Base Bid price. The performance of this inspection and/or any remedial work shall not relieve the CONTRACTOR of any responsibility for defects in materials or workmanship that may or may not be evident during the anniversary inspection.
 - i. Date of Inspection: Failure of OWNER to establish a First Anniversary Inspection date will not relieve the CONTRACTOR of the responsibility to repair the interior and exterior coating system.
25. Welding Repairs: All welding to the interior or exterior of the tank is to be made prior to all painting operations. Any resulting burrs, weld spatter, sharp edges, corners, or rough welds which would cause difficulty in applying a holiday-free coating shall be ground smooth. This grinding is considered incidental to the welding work and is to be included in the Base Bid. After grinding, these areas shall be cleaned to produce the profile recommended by the manufacturer of the coating system. (See Welding and Cutting Precautions paragraph in the GENERAL HEALTH, SAFETY, AND ENVIRONMENTAL REQUIREMENTS Section of these specifications for more requirements on welding.)
26. Cleaning Areas of Welding and/or Grinding: It shall be necessary to remove the coating prior to the welding of the new items to the tank. All areas that have been welded and/or ground smooth shall be cleaned prior to painting to provide proper profile for the coating system. Areas to be welded shall be welded prior to the final cleaning and painting of surfaces within the heat-affected zone. The heat-affected zone includes the opposite side of the plate or member being welded. Even if not specifically mentioned as a part of the Work under this Agreement, those areas of paint or coatings in the heat-affected zone of areas not specified to be painted shall be cleaned and painted in accordance with the requirements listed in these Detailed Technical Specifications.
27. Quality of Paint Application: All cleaning and painting shall be done in a workmanlike manner. **Curing times and ventilation requirements of the paint manufacturer shall be strictly adhered to by the CONTRACTOR.** In addition to the minimum and maximum dry film requirements, all sags, runs, dry spray, pinholes, craters, roller nap, or other irregularities shall be removed and repaired. CONTRACTOR shall perform all necessary inspections and quality control required by the coating manufacturer and obtain certification from the coating manufacturer for honoring coating manufacturer warranties.
28. Protecting Equipment: The telemetering, other electrical apparatus, and other equipment on the tank and site, including all wiring, shall be protected from all damage and dust or other deleterious material infiltration during the operations of the CONTRACTOR. The operation of the equipment shall be continued during the repair, cleaning, and painting operations. Any items damaged by the operations of the CONTRACTOR shall be replaced in kind or acceptably repaired by the CONTRACTOR at no cost to the OWNER.

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29. Painting Environment: All temperature and humidity requirements of the paint manufacturer's published product data shall be followed. In addition, no painting shall be done when: 1) the relative humidity is greater than 85%; or 2) the temperature of the steel is or is expected to be less than 5°F above the dew point temperature during the application and until the coating has cured to resist moisture in accordance with the manufacturer's published product data; or 3) the ambient or steel temperature is below 35°F or is expected to drop below 35°F during the initial cure of the coating. The CONTRACTOR shall have wet bulb-dry bulb measuring equipment and steel temperature measuring equipment on the job at all times. Readings shall be recorded at the beginning and end of each painting session and at no less than 2-hour intervals. Wind velocities during exterior painting shall be compatible for the quality application of the exterior coatings.
30. Minimum Temperature of Coatings to be Mixed: Prior to mixing, each component shall be a minimum of 75° F. The mixed coatings shall also be maintained at a minimum of 65° F during application. All costs associated with keeping the coating material at the minimum specified temperature shall be included in the Base Bid.
31. Mixing of Coatings: Each component shall be thoroughly mixed on-site with a power agitator to ensure no solids or settled material remains on the bottom of the container before combining the components together. Accurate measuring apparatus shall be used to carefully measure each component by volume into a clean container in accordance with the manufacturer's published product data. The container shall be large enough to hold all components to be mixed, including thinner. **The combined material shall be thoroughly mixed with a power agitator to achieve a uniform consistency. Adherence to proper induction times for the combined coating material in accordance with the manufacturer's published product data shall be accomplished by the CONTRACTOR. No coating shall be applied until the minimum induction time has been reached.**
32. Application and Damages: The materials shall be applied in accordance with the manufacturer's published product data and such that the end results are in compliance with these specifications (including all others inferred by reference). Application equipment (including air and airless sprayers, rollers and brushes) shall be good quality, in good condition and shall be as recommended by the coating manufacturer. Techniques shall be used which will not allow coating droplets, etc. to travel more than 30 ft from the base of the tank. **Spray painting of exterior surfaces shall be utilized only with the containment fully raised and the roof covered, and only when the wind velocity and direction, and temperature and humidity are such that paint damage will not occur to real estate or personal property. Brush or roller painting of the exterior surfaces shall be done only with the containment fully raised (with or without the roof covered) and shall be performed only when the wind velocity and direction, and temperature and humidity are such that paint damage will not occur to real estate or personal property.** Prior to the cleaning or coating of any surface, the CONTRACTOR shall present a written plan for review by the ENGINEER and PROJECT REPRESENTATIVE concerning how abrasive and/or paint damage to automobiles and property will be handled, including a process for quick removal of the abrasive or paint, and who will do the Work. This review in no way

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shall relieve the CONTRACTOR from the responsibility of settling claims for damage, but is intended as an avenue to expedite and minimize said claims.

33. Approval of Coatings: All coatings shall be acceptable to the US EPA, Virginia Department of Health (VDH), and/or the controlling local health and environmental regulatory agencies. All interior coating materials, solvents, and other additives shall comply with the ANSI/NSF Standard 61 "Drinking Water System Components - Health Effects." If the manufacturer's product data sheets indicate that the interior coating materials comply with ANSI/NSF Standard 61, then a separate letter from the manufacturer is not required. All coatings to be used shall be listed as to manufacturer and number or description on the Listing of Suppliers, which shall be included with the Bid. The interior and exterior coatings shall be furnished by the same manufacturer unless specifically stated otherwise in these Detailed Technical Specifications. Only thinners recommended and furnished by the paint manufacturer shall be used. The specified coatings are intended to be standards of quality. Alternate coatings, materials, and manufacturers will only be considered after award of the Contract in accordance with the Instructions to Bidders. If alternate coatings are submitted for review, the submittal shall include the following information:
- a. A complete description of the proposed substitute,
 - b. The material for which it is to be substituted,
 - c. A letter from the coating manufacturer certifying that the coating meets or exceeds the coatings specified,
 - d. Price,
 - e. Performance and test data from the laboratory and field (including QUV/UVB testing for the exterior finish coat),
 - f. Coverage,
 - g. Life,
 - h. Manufacturer's field support capabilities.
34. Coating Materials and Thinners: All coatings and thinners shall be new and furnished for this job. They shall be delivered from the coating manufacturer to the job site in the original factory sealed containers which are clearly and properly labeled by the coating manufacturer showing the manufacturer's name, product number, type of coating, batch number, and expiration date. The materials shall be stored, handled, and used in accordance with all manufacturer's published product data, including all requirements listed on the Material Safety Data Sheets (MSDS). Provide adequate storage facilities. Store coating materials within minimum and maximum ambient temperatures in accordance with the manufacturer's recommendations. Temperature of the coating prior to and during mixing shall be within the range stated in the manufacturers published product data. The amounts delivered shall provide the proper coverage rates, taking into account normal application loss.
35. Coating Thickness: The thickness of each type coating is essential to the system's integrity. The addition of mils in a succeeding coat of a different generic type or formulation to make

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up for thin preceding coat(s) shall not be allowed. If a thicker finish coat is needed to hide the underlying darker color on the exterior of the tank, a thicker coat may be applied, but it shall not exceed the maximum allowable thickness recommended by the coating manufacturer. When undercoats or other conditions show through the final coat, additional coats shall be applied until the coating film is of uniform finish, color, and appearance. Under no circumstances shall the dry film thickness of an individual coat or of the total coating system exceed the coating manufacturer's maximum allowable thickness limit. Dry mil thickness greater than the coating manufacturer's maximum allowable thickness shall be considered unacceptable and shall be removed by the CONTRACTOR at no additional cost to the OWNER.

36. Lead and Other Heavy Metal Restrictions in Coatings: Coatings which contain more than 0.06% by weight of lead (or any lead compounds), cadmium, or chromium in the cured coating for each coat applied shall not be used. The CONTRACTOR shall submit documentation from the coating manufacturer stating that their coatings are in compliance with this requirement in addition to other requirements of these specifications.
37. Surface Conditions: The surfaces to be painted shall be free from mud, oil, grease, dust, moisture, salts, and other foreign material which would cause adhesion or other problems in the finished product. The manufacturer's published product data concerning the time between coats and the preparation of the previously painted surfaces shall be followed. If field tests by the FIELD OBSERVER find questionable amounts of contamination on the steel surfaces or painted surfaces to be topcoated, a representative of the home office of the paint manufacturer may be called to examine the surfaces in question and determine if the surfaces are in accordance with these Detailed Technical Specifications and the manufacturer's published product data.
38. Schedule of Coating Application: The primer shall not be applied closer than 6 in. to the edge of an uncleaned surface. If the recoat cycle of the primer prevents completely cleaning and priming the tank before applying the intermediate coat, then the CONTRACTOR shall submit, in writing, a schedule for coating application which will avoid damage to the intermediate and finish coats when applied close to uncleaned surfaces.
39. Restoration: The CONTRACTOR shall restore and/or replace paving, curbing, sidewalks, gutters, shrubbery, fences, sod, or other disturbed surfaces and structures to a condition equal to that before the Work began and to the satisfaction of the ENGINEER and shall furnish all labor and materials incidental thereto.
40. Closeout Procedures: Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for ENGINEER'S observation. Provide submittals to ENGINEER that are required by governing or other authorities. The CONTRACTOR shall submit all documentation to OWNER and ENGINEER necessary for proper completion of the Project. This documentation shall include, but not be limited to, all manifests, abrasive testing results, soil testing results, etc. Submit Application for Final Payment identifying total

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adjusted Contract Sum, previous payments, consent of surety for final payment, and sum remaining due.

G. General Health, Safety, and Environmental Requirements

1. Compliance with Requirements: The CONTRACTOR shall comply with all applicable requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596) and will hold the OWNER and ENGINEER harmless from any civil or criminal penalties imposed as a result of the CONTRACTOR'S noncompliance with such requirements. No additional compensations for changes in the laws, regulations, or the interpretation thereof shall be granted by the OWNER. The CONTRACTOR shall be responsible for complying with all laws and regulations, even if not specifically listed in these Specifications.
2. Emergency Information: The CONTRACTOR shall construct a plywood sign covered with a weatherproof, clear plastic cover and supported by wood posts. The CONTRACTOR shall post information on the plywood sign concerning emergency medical, fire, rescue and hazardous waste phone numbers from which personnel on the site can obtain information if needed. The CONTRACTOR shall also list the name and number of a representative of the CONTRACTOR who can be reached 24 hours a day in case of an emergency. The emergency information shall be in a central position, located so it is visible and accessible 24 hours a day. The emergency information shall be posted the entire length of time that the CONTRACTOR is performing Work at the tank site.
3. CONTRACTOR'S Certification: The CONTRACTOR shall comply with the requirements of the Virginia Lead-Based Paint Activities Regulations, Code of Virginia, as amended, in Title 54.1. The CONTRACTOR shall be certified to perform lead-based paint abatement activities in the State of Virginia. Contact the following for more information on certification:

Virginia Board for Asbestos Licensing and Lead Certification
Virginia Department of Professional & Occupational Regulation
3600 West Broad Street
Richmond, Virginia 23230-4917
804/367-8500
4. Confined Space Entry: The CONTRACTOR shall comply with and have documented Confined Entry Space Procedures available at the tank site 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.
5. Material Safety Data Sheets: Material Safety Data Sheets (MSDS) shall be posted at the job site for each chemical product on the job site, including but not limited to coatings, thinners, other solvents, disinfecting agents, abrasives, welding materials, and flexible sealant material.

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6. Safety and Health: The CONTRACTOR shall comply with safe working practices for abrasive blasting, cleaning, burning, welding, and handling lead-based and nonlead-based coated steel, and all health and safety regulations and requirements of Federal OSHA (specifically OSHA Standard for Construction Industry, 29 CFR 1926.62, “Lead Exposure in Construction; Interim Final Rule,” regarding occupational exposure to lead, and 29 CFR 1926.1126, entitled “Chromium (VI),” regarding occupational exposure to hexavalent chromium), state and local health regulatory agencies, Material Safety Data Sheets (MSDS), SSPC-PA Guide 3, and the paint and abrasive manufacturers. This compliance shall be accomplished without supervision from the OWNER, ENGINEER, FIELD OBSERVER, or other direct or indirect agents of the OWNER. Should vents, holes, rigging attachments, or any other modification, cutting, or welding be required to meet safety standards or otherwise accomplish the Work, they may be accomplished at the expense of the CONTRACTOR upon submitting of details in writing to, and with subsequent permission by the ENGINEER.
7. Rigging Attachments: All rigging attachments present on the tank shall be carefully evaluated by the CONTRACTOR immediately prior to use for the type and magnitude of loads which CONTRACTOR intends to impose on them. Any rigging attachments installed on the tank by the CONTRACTOR shall be removed at the completion Work and areas damaged by the removal of these attachments shall be cleaned and painted in accordance with these specifications. The CONTRACTOR assumes all responsibility for use of any existing or added attachments.
8. Welding and Cutting Precautions: No welding or flame cutting through the existing coating system shall be permitted, unless adequate worker protection is provided in accordance with the instructions in ANSI Z49.1, “Safety in Welding and Cutting,” OSHA Standard for Construction Industry, 29 CFR 1926.62 entitled “Lead Exposure in Construction; Interim Final Rule,” and OSHA Standard for Construction Industry, 29 CFR 1926.1126, entitled “Chromium (VI),” regarding occupational exposure to hexavalent chromium.
9. Compliance with Environmental Regulations: Compliance with local, state and federal regulations concerning emissions, transportation or disposal of solid, particulate, liquid, or gaseous matter as a result of the cleaning, painting, or other operations under this Agreement shall be the responsibility of the CONTRACTOR. This compliance shall be accomplished without supervision from the OWNER, ENGINEER, FIELD OBSERVER, or other direct or indirect agents of the OWNER. No additional compensations for changes in the laws, regulations, or the interpretation thereof shall be granted by the OWNER. No burning of trash (including abrasive bags or other paper or wood products) on the site shall be permitted. All shielding, abrasive retrieval, or other methods of using precautions required by the regulating agencies shall also be accomplished at no additional cost to the OWNER unless otherwise provided herein. **Any fines or damages imposed on the OWNER, ENGINEER, or FIELD OBSERVER by any regulatory agency or court as a result of the CONTRACTOR'S noncompliance with environmental or nuisance regulations or any other applicable standard shall be paid or reimbursed by the CONTRACTOR.**

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10. Attractive Nuisances and Cleanup: The job site shall be kept in a clean and safe condition at all times. Hazards or attractive nuisances shall be protected at all times. Upon completion of the Work, the job site and all nearby sites impacted by the Work activities shall be left clean of all debris, cleaning residue, or any other items resulting from the operations of the CONTRACTOR. The cost of any cleanup that must be done by the OWNER shall be deducted from funds due the CONTRACTOR. Impervious drip pans or double layers of plastic sheeting (each at least 6 mil thick) shall be placed under any compressors, generators, paint pumps, mixers, welding machines, etc. to prevent oils, solvents, organic compounds, or other contaminants from leaching into the soil. Fuel storage tanks, thinners, and other potentially hazardous materials shall be placed inside secondary containment structures to prevent contaminants from leaching into the soil. **Any oils, solvents, organic compounds, or contaminants spilled on the site during the process of the Work shall be immediately removed and cleaned up by the CONTRACTOR. Any earth contaminated by a spill shall also be removed and replaced with new certified clean material to the satisfaction of the OWNER and the ENGINEER. If the OWNER has to remove the oils, solvents, organic compounds, contaminants, or earth, the OWNER may deduct the costs of removal and clean-up from the total contract amount owed the CONTRACTOR.**

11. Authority of CONTRACTOR'S COMPETENT PERSON(S): The CONTRACTOR'S COMPETENT PERSON(S) shall have the complete support of top management and written authority to ensure these operations are carried out in accordance with compliance plans and governmental regulations, independent of production pressures. The CONTRACTOR'S COMPETENT PERSON(S) may have additional responsibilities and carry out other work assignments, but shall not routinely be a member of the crew that actually performs paint removal work.

12. Responsibility of CONTRACTOR'S COMPETENT PERSON(S): The CONTRACTOR'S COMPETENT PERSON(S) shall be responsible for overseeing job site safety and hazardous paint removal operations without supervision of the OWNER, ENGINEER, and/or FIELD OBSERVER. Responsibilities shall include:
 - a. Monitoring effectiveness and ensuring the continued integrity of environmental controls.
 - b. Supervising worker exposure monitoring.
 - c. Ensuring that a hazard communication program has been conducted for the CONTRACTOR'S personnel on site.
 - d. Ensuring that the Confined Entry Space Procedures are followed.
 - e. Ensuring that employees are wearing personal protective equipment and are trained in the use of such equipment in accordance with all OSHA and EPA regulations.

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- f. Ensuring that employees are utilizing fall protection and are trained in accordance with all OSHA regulations.
 - g. Daily inspection and approval of the rigging equipment and scaffolding utilized.
 - h. Ensuring that the engineering controls in use are in operating condition and functioning properly.
 - i. Ensuring that fugitive emissions to air, water, or soil are minimized and that handling of all waste streams is in compliance with applicable regulations and contract specifications.
 - j. Controlling access to the work site and ensuring that contaminated control boundaries are marked off.
 - k. Maintaining project documentation.
13. Sanitary Facilities: The CONTRACTOR shall, at the beginning of the Work, provide on the premises suitable temporary sanitary toilet, wash-up, decontamination facilities, and changing facilities for the use of workers and shall maintain same in a sanitary condition and remove same when directed by the OWNER. The cost of these sanitary facilities shall be included in the Base Bid. The CONTRACTOR is advised that the OWNER is in the business of providing potable water and the CONTRACTOR'S sanitary arrangements shall not endanger the OWNER'S facilities.
14. Medical Surveillance: The CONTRACTOR shall institute a medical surveillance program in complete accordance with OSHA Standard for Construction 1926.62 entitled “Lead Exposure in Construction; Interim Final Rule” and 29 CFR 1926.1126 entitled “Chromium (VI)” regarding occupational exposure to hexavalent chromium or more restrictive regulations. As part of the program, the CONTRACTOR shall make available biological monitoring in the form of blood sampling and analysis for lead. The CONTRACTOR shall furnish certification with the Bid to the ENGINEER and OWNER to document the CONTRACTOR'S compliance with the medical surveillance program requirement. The costs of biological monitoring shall be paid for by the CONTRACTOR. The CONTRACTOR'S medical surveillance program shall be submitted to the ENGINEER and OWNER prior to award of the Contract.
15. Soil Sampling: The FIELD OBSERVER and CONTRACTOR shall remove one soil sample per 1000 sq. ft within the limits of the tank site or as directed by the FIELD OBSERVER prior to the start of Work at the site, identify the soil samples, and deliver the soil samples to the ENGINEER to have atomic absorption testing (total lead) performed on the soil samples. For purposes of defining the tank site for soil sampling, the site shall consist of all land within 50 ft of the tank or otherwise determined by the FIELD OBSERVER. This will result in approximately 4 to 6 sets of samples both before the start of the Project and after completion of the Project. Each set of soil samples shall consist of five 3/4 in. diameter

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plugs by 1/2 in. deep taken from a 1 square foot area. The location where the soil samples were taken shall also be documented. After Substantial Completion of the Work, the FIELD OBSERVER and CONTRACTOR shall remove additional sets of soil samples from the same locations as before, identify the soil samples, and deliver the soil samples to the ENGINEER to have atomic absorption testing (total lead) performed on the soil samples. The cost of testing the initial and final soil samples shall be borne by the OWNER. The CONTRACTOR shall be responsible for seeing that the "Chain of Custody Form" is used on the initial and final sampling of the soil. If the initial and final total lead levels in the soil fall in a category which requires action by the CONTRACTOR, then the CONTRACTOR shall perform the required action as stipulated below.

Initial Total Lead Levels in Soil, “Initial” (mg/kg)	Final Total Lead Levels in Soil, “Final” (mg/kg)	Required Action By Contractor
Initial < 800	Final < 800	none
Initial < 800	800 ≤ Final < 5,000	Interim Controls
800 ≤ Initial	Final < 5,000	none
Initial < 5,000	5,000 ≤ Final	Abatement of Soil
5,000 ≤ Initial	5,000 ≤ Final	none

- a. Interim Controls: Interim Controls, in accordance with EPA guidance document "Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead-Contaminated Soil," include, but are not limited to the following:
 - (1) Establish barriers between children and soil by planting ground cover and shrubbery, moving play equipment, restricting access through posting and fencing, and/or preventing further lead contamination of the area.
 - (2) Monitor condition of interim controls.
 - (3) Post public notice of contaminated common areas.

 - b. Abatement of Soil: Abatement of Soil techniques include, but are not limited to the following:
 - (1) Remove and legally dispose of the contaminated soil and place an OWNER approved topsoil and ground cover over the abated area or pave the site with asphalt.
 - (2) Post public notice of contaminated common areas.
16. Electrical Hazards: The CONTRACTOR shall at a minimum take the following safety measures to prevent accidents due to electrical hazards:
- a. Electric Service Deactivation: The OWNER shall deactivate and lock out the electric service to the tank. The CONTRACTOR shall verify the deactivated status of the

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electric service to the tank prior to beginning each day's Work functions and throughout the work day. The verification of the electric service deactivation is the sole responsibility of the CONTRACTOR and shall be accomplished without supervision from the OWNER, ENGINEER, FIELD OBSERVER, or other direct or indirect agents of the OWNER.

- b. Electric Service Wiring: The CONTRACTOR shall be aware of the electric service wiring attached to and located adjacent to the tank. The CONTRACTOR shall relocate, deactivate, or provide necessary electric shock hazard protective devices to prevent exposure of workers and/or equipment to electric shock hazards. The CONTRACTOR shall verify that there is sufficient electric shock hazard protection for the workers and equipment prior to and throughout each working period on the job. The verification of the electric shock hazard protection is the sole responsibility of the CONTRACTOR and shall be accomplished without supervision from the OWNER, ENGINEER, FIELD OBSERVER, or other direct or indirect agents of the OWNER.

17. Abrasive: The approved abrasive for cleaning shall meet the following requirements:

- a. The abrasive for the **interior** surfaces shall be a commercially available, non-metallic, expendable abrasive or a re-usable abrasive (such as steel grit). **Abrasive used on the exterior shall not be used on the interior.**
- b. The abrasive for the **exterior** surfaces shall be a re-usable abrasive (such as steel grit).
- c. All expendable abrasives shall meet the minimum requirements of SSPC-AB 1 and **all** abrasives meet the requirements of Class A (of SSPC-AB 1) for silica content (crystalline silica less than 1% by weight before blasting). The crystalline silica content shall be determined by the use of infrared spectroscopy or by other analytical procedures, such as wet chemical or X-ray diffraction analyses. The abrasive shall also be of a grit size to produce a 1.5 mil to 2.5 mil profile. If the profile exceeds this range, then the prime coat dry mil thickness shall be increased by the difference between the actual profile and the specified profile to prevent the peaks in the profile from rusting. However, the maximum coating thickness applied shall be in accordance with the coating manufacturer's recommendations. The abrasive shall be properly stored, and it shall be free from contaminants, including but not limited to excessive fine particles, paint, earth, regulated heavy metals, moisture, oil, or chlorides, which can cause premature failure of the coating. Use of abrasive on the exterior of the tank shall be based not only on its compliance with the technical application of the coatings, but also on its lack of nuisance to surrounding property. The CONTRACTOR shall submit manufacturer's published product data sheets for the type of abrasive, grade, and the resulting profile of the abrasive to be used for review prior to the start of any cleaning operations. The CONTRACTOR shall also submit a letter from the coating manufacturer certifying that the resulting profile of the abrasive is acceptable for their coating product.

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- d. All expendable abrasive shall be new and furnished for this job. All abrasive shall be properly stored on skids or in a covered container. The abrasive shall be covered to protect the abrasive from water and weather. Do not allow abrasive to rest directly in contact with the ground.
- e. The steel grit shall meet the requirements of SSPC-AB 3, Newly Manufactured or Re-Manufactured Steel Abrasives, and be approved for use by the manufacturer of the blasting, media recovery, and separation equipment. The initial quantity of grit shall consist of an artificial working mix determined by the CONTRACTOR to produce an acceptable profile in accordance with these specifications. **Any used steel grit used on this Project shall be sampled before use by the FIELD OBSERVER and the CONTRACTOR and the CONTRACTOR shall have the samples sent to a laboratory for atomic absorption testing for total lead. The steel grit shall not be used until the results of the atomic absorption testing are submitted to the OWNER and indicate that the total lead levels are less than 600 ppm (<0.06%).**

Blast Media Recovery and Separation System:

- (1) Equipment Requirements: The equipment provided for the spent abrasive recovery and media separation shall be a portable commercial recycling abrasive blast machine. The re-used abrasive shall comply with the requirements of SSPC-AB 2, Specification for Cleanliness of Recycled Ferrous Metallic Abrasives. The system shall be capable of recovering the abrasive, and returning the spent cleaning debris to a dust separator which shall be an integrated part of the machine. The waste material shall be placed in hazardous container drums in accordance with the Removal and Disposal of Cleaning Residue paragraph of this specification.
 - (2) Equipment Characteristics: As a minimum, the vacuum system used to recover the spent blasting material shall contain the following:
 - i. A double-chambered ASME pressure vessel, which can effectively recycle blast media on a continuous basis, with no interruption, except for air filter back-flushing, media loading to the machine, and removal of collected dust and spent cleaning debris.
 - ii. A dust filter back-flushing system.
 - iii. An air drying system consisting of an air-cooled aftercooler, sling separator, and desiccant drier.
18. Containing Cleaning Debris and Overspray: The CONTRACTOR shall ensure that no spent cleaning/blasting debris, dust, overspray, coating droplets, or emissions of any kind escape to the atmosphere and travel farther than 30 ft from the base of the tank, or any lesser distance required to avoid contamination of adjacent buildings, work sites and parking lots.

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- a. The containment system shall at a minimum meet the emission control requirements of a **Class 2 system**, as specified in Section 4.2.2.2 of the SSPC-Guide 6 (CON), Guide for Containing Debris Generated During Paint Removal Operations, dated October 1, 2004. The ground surrounding the tank shall be protected from all dust, emissions, debris, and other materials generated in the cleaning operations with a minimum of two layers of an impervious membrane covered with plywood.
- b. The CONTRACTOR shall be responsible for all materials that are used and for any apparatus used to contain dust, emissions, debris, overspray, and coating droplets. **The containment system attachments to the tank shall be designed by a Professional Engineer registered in the Commonwealth of Virginia not to impose excessive loading on the tank and tank appurtenances. The CONTRACTOR shall submit the P.E. designed, stamped, and signed details of the containment system and the attachment details for review prior to installation of the containment system on the tank. The containment system will place additional loads on the tank which the tank was not originally designed for. The CONTRACTOR shall reinforce the tank as necessary to assure no damage or permanent deformation occurs to the tank. Any damage done to the tank as a direct or indirect result of the containment system shall be repaired or sections replaced by the CONTRACTOR at no additional cost to the OWNER. Neither the ENGINEER or the OWNER assume any responsibility for the structural ability of the tank to support the containment system.**
- c. If tarps are used as part of the containment system, the tarps shall be an impervious, solid, flame-resistant material, reinforced with a fiber mesh and shall allow as much light as possible to pass through the material.
- d. If complete containment of the tank is utilized to contain all cleaning dust, emissions, debris, paint overspray, and paint droplets, the complete containment shall include a full roof bonnet.
- e. If robotic or creeper-type cleaning devices are used, the robotic or creeper-type cleaning device shall meet the same containment criteria (primarily lack of emissions) as that of other types of containment. All overspray and paint droplets shall be contained on the tank site within the distance listed above.
- f. The OWNER reserves the right to stop work or to require additional or different containment methods if the CONTRACTOR'S operations create a nuisance beyond the tank site property line in the sole opinion of the OWNER, the ENGINEER, the OWNER'S designated representative, any regulatory agency, or neighbor. All costs of providing an adequate containment system shall be included by the CONTRACTOR in the **Base Bid**.
- g. Review of the containment system for containing the spent cleaning dust, emissions, debris, overspray, and coating droplets shall not warrant the structural integrity of the

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containment system and shall not warrant the structural integrity of the tank to support the containment system. Nor shall review of the containment system warrant the ability of the system to contain spent cleaning dust, emissions, debris, overspray, and coating droplets.

- h. All attachments to the tank shall include a "reinforcing" pad designed to distribute the loads and prevent damage to the tank. The reinforcing pad may remain on the tank at the completion of the Project as long as the pad is completely seal welded, all edges ground to 1/8 in. minimum radius, and all corners rounded to 1 in. minimum radius. All other components of the containment system shall be removed by the CONTRACTOR at the completion of the exterior cleaning and painting, being careful to avoid damage to the coatings on the opposite side of steel plates. The containment submittal shall include, at a minimum, the following details and descriptions:
- (1) Brackets (outriggers) to be attached to tank including size, material, etc.
 - (2) Bracket attachments to tank,
 - (3) Number of outriggers and spacing on tank container,
 - (4) Center roof "tree" and attachment details,
 - (5) Reinforcing pad between structure and attachments,
 - (6) Any additional roof support to prevent damage to or deformation of the tank roof or shell,
 - (7) Size of cables to be used and location,
 - (8) Anchorage details of hoist and location,
 - (9) Ground anchors,
 - (10) Catalog cuts of screen (tarp) material,
 - (11) Screen material connections & overlap,
 - (12) Operating/design parameters of containment, such as wind speed when containment shall be lowered or not used,
 - (13) Ground cover, material, etc.
 - (14) Other engineering controls & dust collection, and
 - (15) Any items desired to be left on the structure at the completion of the Project (subject to approval by OWNER).
19. Dust Collection: The CONTRACTOR shall furnish, operate, and maintain adequate dust collection during the Project to achieve negative pressure within the containment or adequate air flow within the tank interior. The dust collection system shall at a minimum meet the requirements of a **Type J1 Air Filtration system**, as specified in Section 5.4.5.1 of the SSPC-Guide 6 (CON), Guide for Containing Debris Generated During Paint Removal Operations, dated October 1, 2004. The dust collection shall be operated during all abrasive blast cleaning and after abrasive blast cleaning until the area is clean enough for coating application. The CONTRACTOR shall be responsible for all sizing, design of ductwork, etc., based upon the CONTRACTOR'S operations, number of blasters, duration of blasting, etc. The CONTRACTOR shall also take precautions to avoid a vacuum from developing inside the tank, as even a slight vacuum inside the tank may cause damage to the roof or shell.

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20. Removal and Disposal of Interior Cleaning Residue: The interior cleaning debris shall be kept separate from the exterior cleaning debris, and shall be cleaned up and stored daily in leak-proof covered dumpsters/containers lined with polyethylene. Each cover shall be designed and installed to keep all rainwater from entering the dumpster/container or the contents. All operations associated with this project shall be in conformance with the Occupational Safety and Health Act (OSHA) of 1970 and all regulations and standards promulgated under this Act, as well as all applicable state and local standards and regulations governing worker safety and health.
- a. The material shall be legally disposed of by the CONTRACTOR in accordance with local, state, and federal laws. The CONTRACTOR shall be responsible for removing and properly transporting all the material from the project site. The material shall be transported in containers approved by the United States Environmental Protection Agency (USEPA) and local, state, and federal regulations. Bidders should prepare their **Base Bid** to include the cost of the transporting of the combined paint and spent cleaning material to a landfill and any disposal costs at that facility. All testing required by regulations or by the selected waste hauler or landfill, including any follow-up testing and the collection of the samples, shall be done at the CONTRACTOR'S expense. Copies of all manifests, testing results and treatment procedure documents shall be sent to the ENGINEER and OWNER.
 - b. All dumpsters/containers and labeling of the dumpsters/containers shall adhere to the US Department of Transportation's regulations (49 CFR Part 172) and the HMTA.
21. Removal and Disposal of Exterior Cleaning Residue - Recyclable Abrasive: If the CONTRACTOR uses a recyclable abrasive to clean the **exterior** surfaces, the removal and disposal of the **exterior** cleaning residue shall be performed in accordance with this paragraph. The exterior paint and cleaning debris shall be kept separate from the interior cleaning debris, and shall be cleaned up and stored daily in separate leak-proof covered dumpsters/containers lined with polyethylene. Each container shall be labeled or marked clearly with the date the first waste is deposited in the container and with the words "Hazardous Waste", and this labeling shall be visible for inspection. Each cover shall be designed and installed to keep all rain water from entering the container or the contents.
- a. All operations associated with this project shall be in conformance with the Occupational Safety and Health Act (OSHA) of 1970 and all regulations and standards promulgated under this Act, as well as all applicable state and local standards and regulations governing worker safety and health.
 - b. The cost of **all** disposal on this Project shall be paid for by the CONTRACTOR. **Due to the high concentration of total lead or other regulated heavy metals in the paint, the material shall be disposed of as a hazardous material regardless if the material is considered nonhazardous or hazardous.** Where testing is required by US EPA or state regulations, the CONTRACTOR shall hire a Virginia state licensed testing laboratory or disposal company (DISPOSAL SUBCONTRACTOR) to collect

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random representative samples of the combined paint and spent cleaning materials from each waste stream in the presence of the FIELD OBSERVER and the CONTRACTOR. All testing required by regulations or by the selected waste hauler or landfill, including any follow-up testing and the collection of the samples, shall be done at the CONTRACTOR'S expense. **Copies of all testing results shall be sent to the ENGINEER and OWNER prior to the removal of any debris from the site. Copies of all manifests, chain of custody forms, testing results, and treatment procedure documents shall be sent to the ENGINEER and OWNER prior to final payment on the Project.** Certification that each sample was taken and tested properly, and that the combined paint and spent cleaning materials were treated and disposed of in accordance with all US EPA and state requirements shall be submitted to the ENGINEER and OWNER.

- c. The combined paint and spent cleaning material shall either be: treated by the disposal facility by an approved method to reduce the leachable concentration levels to below the regulatory limits and disposed of in accordance with all local and/or state regulations; or recycled and used as a raw material in a product approved by the appropriate regulatory agencies. Disposal, treatment or recycling of the material shall be in strict accordance with the federal, state and local laws including, but not limited to RCRA, Toxic Substance Control Act (TSCA), Hazardous Materials Transportation Act (HMTA), USEPA, and VDH regulations. The hauler shall obtain the necessary insurance and the necessary permits for transportation and shall provide evidence of such to the ENGINEER and OWNER.
- d. Included under this item is the furnishing of all materials, equipment, tools, utilities, labor, and supervision necessary for the completion of the work contained in this item in accordance with the drawings and specifications. The item generally includes the recycling, or treatment and transporting and deposition of all hazardous removed paint and spent abrasive material in an approved recycling facility or disposal site, including obtaining all the necessary insurance and the necessary permits for transportation and providing evidence of such to the ENGINEER and OWNER. On-site treatment of hazardous waste shall not be allowed.
- e. TRANSPORTATION: All material, including, but not limited to, the material removed by the recyclable steel grit and/or power tool cleaning, shall be transported to an approved recycling facility or hazardous waste landfill. The hauler shall obtain the necessary insurance and the necessary permits for transportation and shall provide evidence of such to the additional insureds listed elsewhere in this specification. The CONTRACTOR shall submit copies of the transporter's "Spill Contingency Plan" to the ENGINEER and OWNER prior to transporting any material from the site. The "Spill Contingency Plan" shall detail how spills or leaks which occur during transport shall be dealt with. The hauler shall have or shall obtain an identification number from the USEPA, the VDH, and all other applicable state and local licenses and permits.

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- f. All containers and the labeling of the containers shall adhere to the US Department of Transportation's regulations (49 CFR Part 172) and the HMTA.
- g. TREATMENT and DISPOSAL of MATERIAL: All material, including, but not limited to, the material removed by the recyclable steel grit, shall be transported to: an approved recycling facility; an approved treatment facility to reduce the leachable concentration levels to below the allowable regulatory limits and disposed in a local and/or state approved waste landfill. All transporting, recycling, treatment, and disposal shall be in strict accordance with federal and state laws including but not limited to RCRA, TSCA, HMTA, the USEPA and the VDH regulations. The name of the recycling, treatment and/or disposal facility shall be submitted to the ENGINEER and OWNER for approval prior to removing any material from the project site. The disposal or recycling facility shall have or shall obtain an identification number from the USEPA, the VDH, and all other applicable state and local licenses and permits.
- h. The CONTRACTOR shall be responsible for obtaining the proper signatures of the hauler and designated receiving facility on the "manifest" form.
- i. PAYMENT: All costs associated with the transporting, recycling of the material or treatment, and disposal of the material in an approved hazardous waste facility shall be included in the **Base Bid**.

H. Specifications for Repairs and Additions to the Tank

- 1. Construction Drawing Submittals: Five sets of Construction Drawings (or other information) of all fabricated items shall be submitted for review. Drawings submitted shall at a minimum include the following:
 - a. Details of the discharge end of the overflow pipe if different from that shown in Drawing OF.
 - b. Details of the nameplate mounting brackets if different from that shown in Drawing NP.
 - c. Details of the 30 in. bolted shell manholes and davits if different than shown in Drawings SM1 and SM2.
 - d. Details of the roof safety railing and platform access if different from that shown in Drawing SR1.
 - e. Details of the safety railing adjacent to the secondary roof manhole if different from that shown in Drawing SR2.
 - f. Details of the two new 24 in. diameter roof manholes if different from that shown in Drawing RM.

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- g. Details of the new aluminum tank vent and steel exhaust fan flange if different from that shown in Drawing CRV, Sheets 1-4.
 - h. Details of the removable silt stop and bar grate for the inlet/outlet pipe if different from that shown in Drawing IO.
2. Temporary Construction Openings (Door Sheet): If the CONTRACTOR desires to cut a temporary opening through the permanent structure (including the roof) for equipment and personnel access, the CONTRACTOR shall submit the following information for review by the OWNER and ENGINEER **prior** to cutting or welding on the shell. If the submittal is favorably reviewed by the OWNER and ENGINEER, the CONTRACTOR shall remove and replace the shell plate in accordance with American Petroleum Institute (API) Standard 653, API Standard 650, and AWWA D100-05. All required temporary stiffening shall be installed by the CONTRACTOR prior to cutting the temporary shell opening. The CONTRACTOR shall remove the temporary stiffening after the door sheet is welded back in place and repair any surface imperfections prior to coating those areas of the tank surfaces. The CONTRACTOR shall submit for review the following minimum information prior to performing any cutting or welding on the shell or pressure boundary:
- a. A detailed drawing showing the size and configuration of the proposed opening, including details at the intersections with the existing weld seams, corners of the opening, and cut back of corner welds or girth seams.
 - b. Details of the location of the proposed opening relative to existing shell openings or penetrations, weld seams, or other attachments to the shell, such as anchor bolts chairs (if any).
 - c. A detail drawing of the proposed temporary stiffening along each side and across the top of the opening, including the weld details.
 - d. The proposed method (i.e. plasma arc, saw, flame cut, carbon arc-gouge, etc.) and sequence for cutting the opening in the shell and making cut backs. The corner weld between the shell and the bottom shall be gouged on each side at least 12 in. beyond the opening.
 - e. Details of the weld joint preparation for the shell and door sheet, including process for grinding and beveling (how the bevel will be made).
 - f. Description of weld procedures of all joints and attachment welds, including any preheating or post weld heat treating requirements, rod size, etc.
 - g. Description of weld sequence for reinstalling the door sheet.
 - h. Details of the proposed non-destructive examination (NDE) plan with the number and location of x-rays, magnetic particle testing, visual testing, dye penetrant testing, etc.

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- i. Welder credentials and certifications.
- j. Weld qualification procedures.
3. Legal Disposal/Recycling of Removed Steel or Appurtenances: Any existing steel plate, members, or appurtenances of the tank specified to be removed or replaced shall be removed and legally disposed of or recycled by the CONTRACTOR. Any steel plate, members, or appurtenances that are coated with a lead-based coating shall not be disposed of, but shall be recycled. Documentation demonstrating that the material was properly recycled shall be provided to the OWNER.
4. Man-Hours: For unit price work paid for per single man-hour, only time worked performing the specified action, i.e. welding or grinding, and only the time of the person performing the specified action shall be recorded as man-hours to be paid under the unit price item. Costs for all equipment, supplies, normal rigging and associated time required, supervision, Competent Person, overhead, insurance, and profit shall be included in the Base Bid or distributed within the unit price Bid Item to be based upon man-hours used in actual performance of the specified action.
5. Initial Abrasive Blast Cleaning for Evaluation of Pitting: All areas of apparent pitting shall be initially abrasive blast cleaned for evaluation of pitting by the FIELD OBSERVER. The cost of this initial abrasive blast cleaning shall be included in the **Base Bid**.
6. Rehabilitation Welding: After the initial abrasive blast cleaning, any pits defined for pit welding by the FIELD OBSERVER shall be repaired by welding. All areas of apparent seam deterioration shall be initially abrasive blast cleaned, and any seam corrosion or undercut defined by the FIELD OBSERVER shall be repaired by arc-gouging or grinding the deteriorated weld seam (if determined necessary by the FIELD OBSERVER) and welding. Any areas identified by the CONTRACTOR and agreed to by the FIELD OBSERVER shall be repaired by welding 1/4 in. thick patch plates over the area. Edges of holes shall be ground smooth prior to installation of the patch plate. No patch plate shall be smaller than 6 in. in diameter. Edges of the patch plate shall lap no less than 1 in. from the edge of a hole. Corners on the patch plate shall be rounded to 1 in. radius minimum or the plates shall be circular. All exposed edges of the patch plates shall be ground to 1/16 in. radius minimum. The plates shall be installed in accordance with API 653, specifically Figure 9-6. The patch plates shall be welded all around with continuous fillet welds. All welds shall be multi-pass welds. Note the bottom is likely to be thin in the areas of the patch plates, and as such attachment welds and the weld procedures (e.g., electrode size and heat input) should account for this likelihood. **The cost of grinding holes, furnishing and installing patch plates, including material cost, and welding shall be paid for by the unit price per man-hour listed in Bid Item 2.**
7. Pit Filling and Surfacing: After the specified surface preparation, any pits, rough areas or seams defined for pit filling or surfacing by the FIELD OBSERVER shall be filled with solventless polyamide epoxy seam sealer of the type recommended by the supplier of the

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interior paint system. The epoxy seam sealer shall be applied neatly and smoothly to the steel surfaces and any rough areas of the seam sealer shall be sanded smooth prior to the application of the coating system. Costs for all labor, equipment, supplies, rigging, and other associated costs for application of the solventless polyamide epoxy seam sealer shall be included in the unit price per gallon. **The number of gallons of pit filling shall be paid for by the unit price in Bid Item 3.**

8. Interior Chipping and/or Grinding: Any irregular surfaces defined by the FIELD OBSERVER, including but not limited to surface protrusions, burrs, fitting scars, sharp edges or corners, weld spatter, weld overlap and rough weld beads shall be removed from the interior surfaces of the tank, including appurtenances, by chipping and/or grinding these irregular surfaces to a smooth curve. The protruding parts of lugs or brackets shall be removed and ground flush. The objective of chipping and/or grinding is to eliminate irregular surfaces to provide a surface that is sufficiently smooth for the application of a uniform thickness coating without voids and free from defects. This chipping and/or grinding is also intended to make it easier for the interior coating to pass the holiday test. **The number of chipping and/or grinding man-hours on the tank interior shall be paid for by the unit price in Bid Item 4.**

9. Inner Roof Rafter Replacement: After the initial abrasive blast cleaning of the interior, the roof rafters shall be evaluated, and any deteriorated rafters identified by the CONTRACTOR and agreed to by the FIELD OBSERVER shall be replaced in kind. The CONTRACTOR shall remove and legally dispose of the existing rafter and furnish and install a new channel rafter. The existing inner radial roof rafters are approximately 7 in. x 2 in. channels. The CONTRACTOR shall field measure and confirm rafter size prior to fabrication of any new rafters. The new rafter edges shall be ground to a 1/16 in. minimum radius to remove any sharp edges. Any new roof rafters fabricated shall be cleaned and primed prior to installation. The sequence and performance of the roof rafter replacement shall be such that the structural integrity of the roof and tank are not compromised. The CONTRACTOR shall submit a detailed plan for the sequence of the roof rafter replacement to the ENGINEER prior to performance of the work. **The cost for inner roof rafter replacement shall be paid for by the unit price per rafter listed in Bid Item 5.**

10. Outer Roof Rafter Replacement: After the initial abrasive blast cleaning of the interior, the roof rafters shall be evaluated, and any deteriorated rafters identified by the CONTRACTOR and agreed to by the FIELD OBSERVER shall be replaced in kind. The CONTRACTOR shall remove and legally dispose of the existing rafter and furnish and install a new channel rafter. The existing outer radial roof rafters are approximately 10 in. x 2-1/2 in. channels. The CONTRACTOR shall field measure and confirm rafter size prior to fabrication of any new rafters. The new rafter edges shall be ground to a 1/16 in. minimum radius to remove any sharp edges. Any new roof rafters fabricated shall be cleaned and primed prior to installation. The sequence and performance of the roof rafter replacement shall be such that the structural integrity of the roof and tank are not compromised. The CONTRACTOR shall submit a detailed plan for the sequence of the roof rafter replacement to the ENGINEER prior to performance of the work. The cost of the rafter replacement shall include the cost of

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replacing clips and accessories at the attachment ends. **The cost for outer roof rafter replacement shall be paid for by the unit price per rafter listed in Bid Item 6.**

11. Rafter End Clips: After the initial abrasive blast cleaning of the interior, the roof rafter end clips shall be evaluated, and any deteriorated clips identified by the CONTRACTOR and agreed to by the FIELD OBSERVER shall be replaced in kind. The existing rafter end clips are approximately 4 in. x 4 in. x 3/8 in. plates. The CONTRACTOR shall field measure and confirm rafter clip size prior to fabrication of any new rafter clips. The clip connections shall be seal welded all around with continuous 1/4 in. fillet welds. The sequence and performance of the roof rafter clip replacement shall be such that the structural integrity of the roof and tank are not compromised. The CONTRACTOR shall submit a detailed plan for the sequence of the roof rafter clip replacement to the ENGINEER prior to performance of the work. This clip replacement is for rafters to remain and is separate from the clip replacement included with the rafter replacement. **The cost for roof rafter end clip replacement shall be paid for by the unit price per rafter clip listed in Bid Item 7.**

12. Roof Knuckle Angle Replacement: After the initial abrasive blast cleaning of the interior, the roof knuckle angle knee braces shall be evaluated, and any deteriorated angles identified by the CONTRACTOR and agreed to by the FIELD OBSERVER shall be replaced in kind. The CONTRACTOR shall remove and legally dispose of the existing roof knuckle angles and furnish and install new angles. The existing roof knuckle angle knee braces are approximately 4 in. x 3 in. x 1/4 in. angles. The CONTRACTOR shall field measure and confirm angle size prior to fabrication of any new roof knuckle angle knee braces. The new angle edges shall be ground to a 1/16 in. minimum radius to remove any sharp edges. The sequence and performance of the roof knuckle angle knee braces replacement shall be such that the structural integrity of the roof and tank are not compromised. The CONTRACTOR shall submit a detailed plan for the sequence of the roof knuckle angle knee braces replacement to the ENGINEER prior to performance of the work. **The cost for roof knuckle angle knee brace replacement shall be paid for by the unit price per angle listed in Bid Item 8.**

13. Overflow Pipe Discharge Elastomeric Check Valve: If **Bid Item 9** is selected by the OWNER, the CONTRACTOR shall remove and legally dispose of the existing flap gate at the discharge end of the overflow pipe. A new flange and elastomeric check valve shall be furnished and installed on the termination of the overflow pipe as shown in Drawing OF. Backup ring, bolts, and nuts used to secure the check valves and security assembly shall be stainless steel. The check valves shall be constructed from Hypalon. The steel flange shall be cleaned and painted, and the paint shall be cured, before final installation of the elastomeric check valve. The elastomeric check valve shall be installed so that the overflow effluent is directed into the existing basin. The existing angled end of the overflow pipe shall be raised, including relocating the bottom bracket, to allow for an air break of 12 in. to 24 in. between the end of the new elastomeric check valve and existing basin. **The modification of the discharge end of the overflow pipe and the furnishing and installation of a new elastomeric check valve shall be paid for by the lump sum price listed in Bid Item 9.**

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14. Concrete Repair: Any chipped concrete corners (greater than 1 in. loss), cracks (greater than 1/16 in. wide), and other failed areas of concrete indicated by the FIELD OBSERVER shall be chipped to sound concrete so that the edge of the chipped-out area is at least 60° with the surface of the concrete. Then these areas shall be prepared by cleaning to remove all paint, coating materials, dust, laitance, grease, or other bond-inhibiting materials. The CONTRACTOR shall apply a patch of Emaco R350 from Master Builders, Euco Verticote from Euclid Chemical Company, SikaRepair 223 from Sika Corporation, or equal allowed in writing by the ENGINEER. The materials shall be prepared and applied in accordance with the manufacturer's instructions. The patched areas shall conform to the original contour of the concrete foundation $\pm 1/8$ in. After the patching material has hardened sufficiently for the removal of any forms, etc., a water-based curing compound shall be applied to the surfaces of the repaired area. The curing compound shall be a water-based material such as Masterkure 200W from Master Builders, Aqua-Cure from Euclid Chemical Company, or equal allowed in writing by the ENGINEER. This concrete repair shall be performed a minimum of 28 days prior to the cleaning and painting of the concrete to allow the concrete patching material to cure in accordance with the manufacturer's recommendations.
15. Grout Repair: The existing sealant and foam rod at the bottom plate shall be removed. The grout which is between the bottom plate and the concrete foundation shall be tested by the CONTRACTOR under the observation of the FIELD OBSERVER by using a sharp 16 oz. hammer. Any missing or loosened portions of grout shall be replaced with a nonshrinking, nonstaining, high-strength structural grout material. The material shall be Master Builders' MASTERFLOW 928, Euclid Chemical Company's EUCO N-S Grout, L&M Construction Chemicals' DURAGROUT, Sika Corporation's SikaGrout 212, or equal allowed in writing by the ENGINEER. The final contour of the grout shall be vertical and flush with the outer edge of the bottom plate, and shall not overlap the outer edge of the bottom plate. After the grout has hardened sufficiently for the application of a curing compound, a water-based curing compound shall be applied to the exposed grout surfaces. The curing compound shall be a water-based material such as MASTERKURE 200W from Master Builders, AQUA-CURE from Euclid Chemical Company, L & M CURE from L&M Construction Chemicals, Inc., or equal allowed in writing by the ENGINEER. After cleaning and painting, any separation between the bottom plate and the grout greater than 1/32 in. shall be filled with Sikaflex-1a from Sika Corporation, or equal allowed in writing by the ENGINEER.
16. Grinding Sharp Edges Along Bottom Plate: Sharp edges along the exterior bottom plate projection shall be ground smooth. The objective of grinding is to eliminate irregular surfaces to prevent knife edge corrosion and to provide a surface that is sufficiently smooth for the application of a uniform thickness coating without voids and free from defects. This grinding shall be included in the **Base Bid** and is separate from the interior grinding of **Bid Item 4**. Material within 1-1/4 in. from the exterior shell shall not be removed without prior notification of the ENGINEER.
17. Nameplates: The nameplates shall be removed by carefully chiseling off the rivet heads. The rivet remains shall be ground flush. Two new plate mounting brackets shall be

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furnished and installed on the tank exterior by welding with continuous fillet welds as shown in Drawing NP. One bracket shall be for one approximately 5 in. high x 8 in. wide nameplate and one approximately 2-1/2 in. high x 8 in. wide nameplate, and the other bracket shall be for one approximately 5 in. high x 8 in. wide nameplate. The location of the new nameplate mounting brackets shall be above the same shell manhole as the original location of the tank nameplates. The areas behind the nameplates and the new mounting brackets shall be cleaned and painted in accordance with the SPECIFICATIONS FOR CLEANING AND PAINTING THE TANK EXTERIOR section of these Detailed Technical Specifications. Any paint on the nameplates shall be removed by solvent cleaning or other methods which will not damage the surface of the nameplate. The nameplates shall be bolted to the mounting brackets with stainless steel stove bolts and nuts. The nameplates shall be protected from the application of paint on the exposed surface.

18. Platform Safety Railing Modification: An approximately 29-1/4 in. x 37-1/2 in. platform is located at the top of the tank. The safety railing for the platform shall be modified as follows:
- a. The three existing 2 in. x 2 in. x 1/4 in. angle uprights for the platform safety railing shall be replaced by the CONTRACTOR with new 2 in. x 2 in. x 3/8 in. angle uprights while maintaining the existing handrail height of more than 42 in.
 - b. The existing 2 in. x 3/16 in. intermediate rail for the platform safety railing shall be removed and legally recycled by the CONTRACTOR, and two new 2-1/2 in. x 3/8 in. intermediate rails shall be installed with spacing similar to that shown on Drawing SR1.
 - c. The existing platform toe bar projects 3 in. above the platform floor grating. A new minimum 1 in. x 1/4 in. flat bar extension shall be added to the toe bar so that the toe bar extends a minimum of 4 in. above the platform floor grating. The toe bar extension shall be seal welded all around by butt welding to the existing toe bar and with continuous fillet welds to the uprights.

The existing railing extending from the platform to near the center of the roof shall remain.

19. Roof Safety Railing: The CONTRACTOR shall furnish and install new sections of safety railing, with pipe handrails, two flat bar intermediate rails, and toe bars on the roof adjacent to the platform and roof manhole to comply with present OSHA standards. The safety railing installation and platform access opening modification shall be in accordance with Drawing SR1. Type 304 stainless steel chains with hooks shall be furnished and installed at the handrail and midpoint levels at the platform access to provide closure of the rail opening while personnel are on the platform. The links of the chain shall have a minimum cross-sectional diameter of 3/16 in.
20. Roof Manhole Safety Railing: The CONTRACTOR shall furnish and install sections of safety railing, with pipe handrails, two flat bar intermediate rails, and toe bars on the roof

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adjacent to the secondary roof manhole to comply with present OSHA standards. The safety railing installation shall be in accordance with Drawing SR2.

21. Replace Two 24 in. Diameter Roof Manholes: The two existing roof hatches and necks shall be replaced with new 24 in. diameter roof manholes. The manholes, and their installation, shall be per Drawing RM. A 1/4 in. thick cover plate shall be utilized to fill any void in the roof plate adjacent to the new roof manhole neck. The 1/4 in. cover plate shall lap over the existing roof plates at least 1-1/2 in. but not more than 3 in., and be welded with 1/4 in. continuous fillet welds on the outside and inside.
22. Aluminum Roof Vent and Steel Exhaust Fan Flange: The present roof vent shall be removed and the present vent opening modified to 24 in. diameter. A new 24 in. diameter combination aluminum clog-resistant screened vent assembly and 24 in. diameter steel exhaust flange shall be installed in this opening. A 1/4 in. thick cover plate shall be utilized to fill any void in the roof plate adjacent to the new neck. The 1/4 in. cover plate shall lap over the existing roof plates at least 1-1/2 in. but not more than 3 in., and be welded with 1/4 in. continuous fillet welds on the outside and inside. The new 24 in. diameter combination aluminum clog-resistant screened vent assembly and 24 in. diameter steel exhaust flange shall conform to the dimensions and installation details shown in Drawing CRV, Sheets 1-4. The aluminum vent shall be removable from the steel manhole/exhaust flange. The vent screen shall be supported to not produce a gap greater than 0.10 in. The vent shall have a minimum of 450 square inches of free vent area. The bolts and nuts utilized in the tank vent shall be of stainless steel or silicon-bronze material. The vent shall be designed to prevent clogging over and have provision for release of or prevention of any subsequent vacuum or pressure formed in the tank, prior to structural damage or deformation of the tank. The vent screens and pallets shall be designed to return to their original design locations without human effort after the release of any pressure or vacuum and the screens shall continue to provide screening of the vent during subsequent tank operation. The vent cap shall be designed with a vertical overhang to prevent the entrance of wind driven debris and precipitation. The new exhaust flange assembly shall be welded with 3/16 in. fillet welds around its circumference on the outside and inside of the tank. The exhaust flange neck shall be welded to an annular eight bolt flange with continuous 1/4 in. fillet welds on the exterior and interior surfaces. Rough edges and weld spatter shall be ground smooth prior to cleaning to properly receive paint.
23. Removable Silt Stop and Protective Bars at Inlet/Outlet Pipe Opening: The existing inlet/outlet pipe penetration above the bottom plate shall be trimmed at 3/4 in. above the bottom plate above the existing weld. A new removable silt stop and bar grate shall be furnished and installed on the inlet/outlet pipe in the bottom of the tank. The removable silt stop and bar grate shall conform to the design and dimensions shown in Drawing IO. The CONTRACTOR shall verify the pipe diameter prior to fabrication of the removable silt stop and bar grate.
24. Cathodic Protection System: The CONTRACTOR (or Freeman Industries, Inc) shall remove and legally dispose of the cathodic protection system anodes and interior wiring

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from the tank prior to any cleaning, repairing or painting operations. The CONTRACTOR shall hire Freeman Industries, Inc, 3322 Mells Road, Dorset, OH 44032, 440/858-2600, FAX 440/858-2006, to furnish and install a new cathodic protection system. The existing rectifier and hand holes may be utilized. The cathodic protection system shall be in accordance with the ENGINEER and OWNER reviewed details from the accepted CATHODIC PROTECTION SUBCONTRACTOR. The cathodic protection system shall not be energized until after the First Anniversary Inspection of the painting has been conducted. Upon completion of the First Anniversary Inspection, CONTRACTOR shall have the qualified CATHODIC PROTECTION SUBCONTRACTOR calibrate the cathodic protection system for proper operation. The CONTRACTOR shall forward the certified results of the installation and calibration to the OWNER and ENGINEER. The name and address of the proposed CATHODIC PROTECTION SUBCONTRACTOR shall be stated in the Bid Form.

25. Cathodic Protection Handhole Covers: The CONTRACTOR shall remove the existing cathodic protection handhole covers in the tank roof for the cleaning, painting, and curing of the paint. Approximately sixty-seven (67) hand holes are present in the roof. After curing of both the interior and exterior paint systems, the handhole covers shall be installed with new gaskets to cover the handholes. The CONTRACTOR shall furnish and install handhole covers and gaskets for any covers which are missing (none were missing at the time of the field evaluation). The two bolt holes at each handhole shall be plugged with galvanized steel bolts, nuts, and washers. Two washers shall be used for each bolt, one washer on the interior and one washer on the exterior.
26. Shell Manhole Bolts: The CONTRACTOR shall remove and legally dispose the existing bolts and nuts from the two flanged and bolted shell manholes. 28 new approximately 5/8 in. diameter x 2-1/2 in. long galvanized steel bolts and nuts shall be furnished and installed in the existing 24 in. diameter flanged and bolted manhole, and 42 new approximately 3/4 in. diameter x 2-1/2 in. long galvanized steel bolts and nuts shall be furnished and installed in the existing 36 in. diameter flanged and bolted manhole. In addition, galvanized steel washers shall be furnished and installed between the bolt and the manhole, and between the nut and the manhole. Prior to installation of the bolts, the bolt threads shall be coated with a food-grade antiseize lubricant. The sizes of the bolts shall be field verified by the CONTRACTOR.
27. Manhole Gaskets: After the completion of the application and curing of the interior paint, new 1/4 in. thick full-face gaskets shall be furnished and installed in the existing 24 in. diameter flanged and bolted shell manhole and in the existing 36 in. diameter flanged and bolted shell manhole. The gaskets shall be made from commercial grade neoprene, meeting ASTM D2000-86E, Type BC, with a 70A durometer rating, and black color.
28. Locking Manholes: The roof manholes entering the container shall be locked at the completion of the Work, using padlocks furnished by the OWNER.

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29. Bolted Shell Manholes: If **Bid Item 12** is selected by the OWNER, the CONTRACTOR shall furnish and install two new 30 in. diameter shell manholes in compliance with AWWA D100-05 and Drawing SM1 at approximately 90° from the existing shell manholes and approximately 180° from each other. Each new manhole cover shall be supported by a davit in accordance with Drawing SM2. The locations shall be as directed by the FIELD OBSERVER. The CONTRACTOR shall have each manhole reinforcing plate air leak tested at 15 psig maximum in accordance with API Standard 653, 3rd Edition (Addendum 3 – February 2008 and Errata – April 2008) – “Tank Inspection, Repair, Alteration, and Reconstruction” and API Standard 650, 11th Edition (Addendum 1 – November 2008) – “Welded Steel Tanks for Oil Storage.” This testing shall be performed in the presence of the FIELD OBSERVER. The cost of this testing shall be included in **Bid Item 12**. After the pressure test the tell tale holes shall be plugged. **The cost of furnishing and installing the new shell manholes shall be paid for by the unit price per shell manhole listed in Bid Item 12.**
30. Second Aluminum Roof Vent and Steel Exhaust Fan Flange: If **Bid Item 13** is selected by the OWNER, a second 24 in. diameter combination aluminum clog-resistant screened vent assembly and 24 in. diameter steel exhaust flange shall be installed in a new 24 in. diameter opening near the center of the roof between roof structure members. The new vent opening shall be installed so as not to be obstructed by the existing roof structure members. The 24 in. diameter combination aluminum clog-resistant screened vent assembly and 24 in. diameter steel exhaust flange shall conform to the dimensions and installation details shown in Drawing CRV, Sheets 1-4. The aluminum vent shall be removable from the steel manhole/exhaust flange. The vent screen shall be supported to not produce a gap greater than 0.10 in. The vent shall have a minimum of 450 square inches of free vent area. The bolts and nuts utilized in the tank vent shall be of stainless steel or silicon-bronze material. The vent shall be designed to prevent clogging over and have provision for release of or prevention of any subsequent vacuum or pressure formed in the tank, prior to structural damage or deformation of the tank. The vent screens and pallets shall be designed to return to their original design locations without human effort after the release of any pressure or vacuum and the screens shall continue to provide screening of the vent during subsequent tank operation. The vent cap shall be designed with a vertical overhang to prevent the entrance of wind driven debris and precipitation. The new exhaust flange assembly shall be welded with 3/16 in. fillet welds around its circumference on the outside and inside of the tank. The exhaust flange neck shall be welded to an annular eight bolt flange with continuous 1/4 in. fillet welds on the exterior and interior surfaces. Rough edges and weld spatter shall be ground smooth prior to cleaning to properly receive paint. **The cost of furnishing and installing the second 24 in. diameter combination aluminum clog-resistant screened vent assembly and 24 in. diameter steel exhaust flange shall be paid for by the lump sum price listed in Bid Item 13.**

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I. Specifications for Cleaning and Painting the Tank Exterior

1. Surfaces to be Cleaned and Painted: All exterior surfaces of the tank, including (but not limited to) all piping and appurtenances, and all threads, bolts, nuts, pins, brackets, seams, corners, etc. including the manhole neck of the roof vent, but excluding the nameplate and the ladder safe-climbing device, shall be cleaned and painted in accordance with the paragraphs in this section.
2. Irregular Surfaces: Any burrs, weld spatter, rough welds, weld overlap, bolts, sharp edges, or corners or any areas disturbed or installed by the CONTRACTOR'S operations which would cause difficulty in achieving a defect-free coating shall be chipped and/or ground smooth. Any pinholes or voids in exterior welds (such as the overflow brackets, etc.) shall be filled with an epoxy seam sealer. It is not the intent to have these irregular surfaces chipped and/or ground flush. The objective of the chipping, grinding and/or seam sealing is to eliminate irregular surfaces to provide a surface that is sufficiently smooth for the application of a uniform thickness coating without voids. This chipping, grinding and/or seam sealing is considered incidental to the exterior painting and is to be included in the Base Bid.
3. Cleaning and Debris Removal: The surfaces mentioned above in paragraph 1 of this Section shall be cleaned to a degree of cleanliness equivalent to SSPC-SP 6, Commercial Blast Cleaning (modified) by a method approved by the ENGINEER and OWNER. The paint and cleaning debris shall be promptly stored in leak-proof covered dumpsters/containers on the site and disposed of in accordance with the Removal and Disposal of Cleaning Residue paragraph of the GENERAL HEALTH, SAFETY, AND ENVIRONMENTAL REQUIREMENTS Section of these Detailed Technical Specifications. The exterior debris shall be kept separate from the interior paint and cleaning debris.
4. Priming: Not later than during the same day and before the forming of rust, the cleaned surfaces (SSPC-SP 6) shall be primed with the specified primer.
5. Stripe Coat: After the application of the first coat, all seams, edges, lapped joints, rough areas, bolt heads and nuts, remains of erection lugs and scars, corners, member intersections, and other deviations from smooth surfaces shall be primed by brush and/or roller using 10% thinned material in a contrasting color to the primer. The 10% thinned material shall be worked sufficiently into all cracks, crevices, and seams. Initial spray application of this stripe coat shall not be permitted.
6. Priming Inaccessible Areas: Should any areas exist where the intersection of two members does not allow the complete cleaning of the intersection and the members cannot be separated for cleaning (such as bottom plate-to-grout intersection, etc.), these intersections shall be post-primed with an aluminum platelet pigmented, material suitable for marginally cleaned surfaces. The material shall be recommended by the manufacturer of the exterior paint system and shall be as follows:

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- a. Carboline Carbomastic 15 Aluminum,
 - b. Sherwin-Williams Epoxy Mastic Aluminum II,
 - c. Tnemec 135-1243 Chembuild Metallic Aluminum,
 - d. or other material favorably reviewed in writing by the ENGINEER.
7. Intermediate Coat: The surfaces mentioned above in paragraph 1 of this Section shall then be given one intermediate coat of paint. The color shall be slightly darker than that chosen for the finish coat, being dark enough to visually assure application of the finish coat, and light enough to allow proper hiding. (An intermediate coat lighter than the finish coat shall not be permitted due to the inability to distinguish between the lighter intermediate and the highlights of the gloss finish.) The coating manufacturer shall recommend a darker color for the intermediate coat and this color shall be submitted for review.
8. Finish Coat: The surfaces mentioned above in paragraph 1 of this Section shall then be given a final coat of the selected paint in a color selected by the OWNER.
9. Coatings: Acceptable coating manufacturers and specifications for the exterior surfaces of the steel water storage tank follow; however, the CONTRACTOR is advised that all manufacturers presented below must certify that the coatings furnished are in compliance with these Specifications.

a. **Carboline Company, St. Louis, MO 63144**

(1) Carboguard 890	2.0 - 3.0 mils
(2) Carboguard 890	2.0 - 3.0 mils
(3) Carbothane 133 HB (semi-gloss)	3.0 - 4.0 mils
Total System Dry Thickness	7.0 - 10.0 mils

b. **The Sherwin-Williams Company, Cleveland, OH 44101**

(1) Macropoxy 646	2.0 - 3.0 mils
(2) Macropoxy 646	2.0 - 3.0 mils
(3) High Solids Polyurethane or Acrolon 218 HS (semi-gloss)	3.0 - 4.0 mils
Total System Dry Thickness	7.0 - 10.0 mils

c. **Tnemec Company, Inc., Kansas City, MO 64141**

(1) 66 Epoxoline	2.0 - 3.0 mils
(2) 66 Epoxoline	2.0 - 3.0 mils
(3) 1075U Endura-Shield II (semi-gloss)	2.0 - 3.0 mils
Total System Dry Thickness	6.0 - 9.0 mils

J. Specifications for Cleaning and Painting the Tank Interior

- 1. Surfaces to be Cleaned and Painted: All interior surfaces of the container, including (but not limited to) the roof structure, manholes, weir box, threads, bolts, nuts, pins, brackets, seams,

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corners, etc., and the inside of the roof vent flange (with the exception of all surfaces of the vent interior and exterior, all screens, and all clog-resistant pallet materials, i.e. polyethylene, teflon, etc.), shall be cleaned and painted in accordance with the paragraphs in this Section. The exterior of the attachment flange to the roof shall be cleaned and painted in accordance with Specifications for Cleaning and Painting the Tank Exterior. The vent screens and the clog-resistant pallet materials shall be protected from the application of all coatings.

2. Cleaning Tank and Debris Removal: The OWNER will remove all water from the tank which will drain by gravity through the drain line. The CONTRACTOR shall remove all standing water, mud, and debris from the tank prior to starting work. All loose rust, loose paint, and dirt shall be removed from the tank interior prior to the beginning of cleaning operations. This debris shall be promptly stored in leak-proof covered dumpsters/containers on the site and disposed of in accordance with the Removal and Disposal of Cleaning Residue paragraph of the GENERAL HEALTH, SAFETY, AND ENVIRONMENTAL REQUIREMENTS Section of these Detailed Technical Specifications. This debris shall be kept separate from the exterior paint and cleaning debris. Any water that enters the tank through leaking valves throughout the course of the Project shall be collected and removed from the tank by the CONTRACTOR at no additional cost to the OWNER.

3. Cleaning and Painting: The interior surfaces mentioned above in paragraph 1 of this Section shall be cleaned to a degree of cleanliness equivalent to SSPC-SP 10, Near-White Blast Cleaning (modified) by a method approved by the ENGINEER and OWNER. The paint and cleaning debris shall be promptly stored in leak-proof covered dumpsters/containers on the site and disposed of in accordance with the Removal and Disposal of Cleaning Residue paragraph of the GENERAL HEALTH, SAFETY, AND ENVIRONMENTAL REQUIREMENTS Section of these Detailed Technical Specifications. This debris shall be kept separate from the exterior paint and cleaning debris. The sequencing and timing of the areas to be cleaned and painted shall be done in a manner to complete the Work in accordance with these Detailed Technical Specifications and within Contract Time.
 - a. Prime Coat: Before the formation of rust and after observation of the surface by the FIELD OBSERVER, all cleaned surfaces shall be primed with the first coat specified below.

 - b. Stripe Coat: After the application of the first coat, all seams, all edges (including edges of columns, rafters, and girders), rough areas, deviations from smooth surfaces, pits, bolt heads and nuts, remains of erection lugs and scars, and corners (including corners of columns, rafters, and girders) shall be primed by brush and/or roller using 10% thinned material in a contrasting color to the primer. The 10% thinned material shall be worked sufficiently into all cracks, crevices, and seams. Initial spray application of the stripe coat shall not be permitted.

 - c. Finish Coat: After the recommended drying period of the prime coat and stripe coat, a second full finish coat shall be applied.

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4. Seam Sealer: After cleaning, seam sealer is to be applied to the roof vent intersection and roof manhole intersection to seal these intersections from moisture. It shall be applied in a workmanlike manner, being beveled at approximately 45°. **The cost of this seam sealing is to be included in the Base Bid, separate from other applications using seam sealer which may be listed in the SPECIFICATIONS FOR REPAIRS AND ADDITIONS TO THE TANK section of these Detailed Technical Specifications and included as a separate bid item.** At the CONTRACTOR'S option, the Tnemec 63-1500 Filler and Surfacer may be applied after the priming of the surface, providing no rust has formed on any uncoated surfaces (such as crevices between plates). This material shall be recommended by the manufacturer of the interior paint system.
- a. Carboline Carboguard 501,
b. Sherwin-Williams Steel-Seam FT910,
c. Tnemec 63-1500,
d. or other material favorably reviewed in writing by the ENGINEER.
5. Compliance with ANSI/NSF Standard 61: The approval of potable water tank interior coatings and sealers shall be based on written certification of compliance with ANSI/NSF Standard 61 and compliance with the requirements of state agencies. Adequate manufacturer's published product data concerning the transportation, storage, mixing, thinning, pot life, application, and curing shall be furnished to ensure that the finished product complies with ANSI/NSF Standard 61.
6. Certification: Manufacturers presented below must certify that their coatings furnished are in compliance with the Specifications.
7. Coatings: Acceptable coating manufacturers and specifications for the interior wet surfaces of the steel water storage tank follow, and are intended to comply with the requirements of AWWA D102-06 Inside System No. 1, Two-Coat, Two-Component Catalyzed High Build Epoxy System with the exception that 10 mils total are required, and the brush post-priming of the seams and potential holiday areas is required.

a. **Carboline Company, St. Louis, MO 63144**

(1) Carboguard 561 1898 (Off-White)	4.0	-	6.0 mils
(2) Carboguard 561 0800 (White)	5.0	-	6.0 mils
Total System Dry Thickness*	10.0	-	12.0 mils

*Although the minimum thickness per coat is 4.0 and 5.0 mils respectively, the minimum total system thickness shall be 10.0 mils.

b. **The Sherwin-Williams Company, Cleveland, OH 44101**

(1) Macropoxy 646 PW (Blue)	4.0	-	6.0 mils
(2) Macropoxy 646 PW (White)	5.0	-	6.0 mils
Total System Dry Thickness*	10.0	-	12.0 mils

*Although the minimum thickness per coat is 4.0 and 5.0 mils respectively, the minimum total system thickness shall be 10.0 mils.

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c. **Tnemec Company, Inc., Kansas City, MO 64141**

(1) 20-1255 (Beige) Pota-Pox	4.0 - 6.0 mils
(2) 20-15BL (Tank White) Pota-Pox	5.0 - 6.0 mils
Total System Dry Thickness*	10.0 - 12.0 mils

*Although the minimum thickness per coat is 4.0 and 5.0 mils respectively, the minimum total system thickness shall be 10.0 mils.

8. Underwater Epoxy: The following manufacturer's underwater curing epoxy paints/gels for use at the First Anniversary Inspection are acceptable for this Project:

a. **Raven Lining Systems, Tulsa, OK 74106**

(1) AquataPoxy A-6 Paint (White)	8.0 - 12.0 mils
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9. Flexible Sealant: If **Bid Item 10** is selected by the OWENR, after the curing of the finish coat of paint, Sikaflex-1a flexible polyurethane sealant (or equal allowed in writing by the ENGINEER) shall be applied to the unwelded lapped container roof seams, the roof knuckle circumferential stiffener, and weir box intersections. It shall be applied in a workmanlike manner, being beveled at approximately 45°. The color of the sealant shall be white. The sealant shall have the approval for use in potable water from the US EPA, ANSI/NSF, and any applicable local health regulatory agency. **The furnishing and application of the flexible sealant shall be paid for by the lump sum price listed in Bid Item 10.**

10. Holiday Testing: All interior coatings, including those above the top capacity level, shall be checked with a holiday detector by the CONTRACTOR. Testing shall be done in accordance with Section 5.1.3 of AWWA D102-06 and NACE SP0188 in the presence of the FIELD OBSERVER. Any voids indicated shall be repaired by applying more of the finish coat of paint by brush or roller. The repaired areas shall be retested after the appropriate curing time. The coating system must pass the holiday test regardless of the mil thickness existing.

11. Curing: **Each coat shall be properly cured before the application of any subsequent coats.** The interior area coating shall be completely cured and the tank shall not be filled with water until approved by the ENGINEER and OWNER. The exterior coating on the opposite side of water bearing surfaces shall be completely cured and the tank shall not be filled with water until approved by the ENGINEER and OWNER. CONTRACTOR shall perform solvent rub tests, pencil hardness tests, or other industry recognized testing procedures recommended by the coating manufacturer to determine the coatings have cured prior to filling the tank. A letter from the CONTRACTOR certifying their testing results and that the interior coating has cured such that it is ready for immersion service shall be submitted to the ENGINEER and OWNER prior to filling the tank. The CONTRACTOR shall monitor the tank bottom plate temperature during the interior coating curing to verify that minimum steel temperature requirements are satisfied.

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12. Ventilation: Forced ventilation shall be supplied to the interior of the tank for a period of time equal to the paint manufacturer's recommended recoat times for the prime coat and for a continuous period of at least 48 hours after the final coat has been applied. Adequate ventilation of the container bottom and other low lying areas of the tank and container shall be provided by the CONTRACTOR as required for solvent release and coating cure. This ventilation shall, at a minimum, be in accordance with AWWA D102-06 and shall be submitted for review. The CONTRACTOR shall furnish, install, and operate the equipment that is necessary to provide forced ventilation to aid curing. If supplementary heating or dehumidification is required to effect curing, the CONTRACTOR shall furnish, install, and operate the equipment to perform the supplementary heating or dehumidification required at no additional cost to the OWNER.
13. Diesel Powered Equipment: Due to possible contamination of the surfaces to be painted, diesel powered equipment shall not be used inside the tank unless equipped with an approved scrubber.
14. Recoat Cycle: The CONTRACTOR shall review the manufacturer's published product data for minimum and maximum recoat times for the interior coating system selected for use. No succeeding coat shall be applied prior to the minimum recoat time of the preceding coat. If the maximum recoat window is exceeded **prior** to application of the succeeding coat, then the CONTRACTOR shall prepare the interior surfaces in accordance with the manufacturer's published product data prior to the application of the next coat. The cost for this additional surface preparation shall be borne by the CONTRACTOR with no additional cost to the OWNER. The Contract Time shall not be increased as a result of this additional surface preparation.
15. Inlet/Outlet, Drain, Recirculation, and Overflow Piping: The CONTRACTOR shall be responsible for assuring that no foreign material including, but not limited to paint, abrasive, rags, or tools enter the inlet/outlet, drain, recirculation, or overflow piping during the execution of the Work. Any material found in this piping at the time the tank is placed back into service shall be removed at the expense of the CONTRACTOR. To aid in preventing the entrance of foreign material, the CONTRACTOR shall drain the pipe and either tack weld a plate over the pipe or place an expandable plug in the pipe. If a plate is tack welded over the pipe, the plate shall completely cover the pipe and shall not be removed until the interior and exterior painting is complete. After the plate is removed the damaged areas of coating and weld burrs shall be ground smooth and recoated in accordance with the applicable paragraphs in these **Detailed Technical Specifications**. If an expandable plug is inserted in the pipe, the plug shall be placed approximately 18 in. down in the pipe to allow for proper coating of the pipe. The pipe interior shall be cleaned and painted approximately 1 pipe diameter below the top of the pipe.

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K. Specifications for Cleaning and Painting the Concrete Foundation

1. Preparation: The CONTRACTOR shall dig down around the foundation to expose approximately 4 in. more of the concrete than is normally exposed (at least 10 in. from the top of concrete). The same is to be done with all other concrete within the tank site. Prior to any digging, the CONTRACTOR shall contact the utility hot line, Virginia Miss Utility 1-800/552-7001, to have all utilities marked on the site. All concrete areas thus exposed (from the excavated ground to the bottom plate) shall be cleaned by blast cleaning to SSPC-SP 13, Surface Preparation of Concrete for Severe Service. Any existing coatings and other contaminants shall be removed without entirely removing the surface concrete. The aggregate shall not be exposed by the blasting operations. All efflorescence and laitance shall be removed from the surface. The cleaning operation shall be performed to open subsurface holes and voids and to produce a profile for the proper adherence of the specified coating system (equivalent to 40-60 grit sand paper). The abrasive used for the blast cleaning operations shall be a nonmetallic type abrasive. The color shall be approximately equivalent to the concrete surface to be cleaned.

2. Coating Application: All cleaned concrete areas (SSPC-SP 13) shall be given two roller-applied coats of the specified coating.

3. Approved Coatings: Acceptable coating manufacturers and specifications for the concrete and grout surfaces follow; however, the CONTRACTOR is advised that all manufacturers presented below must certify that the coatings furnished are in compliance with these Specifications. The finish coat shall be in a color matching the Tnemec color listed below.
 - a. **Carboline Company, St. Louis, MO 63144**

(1)	Carboguard 561 or Carboguard 890	3.0 - 5.0 mils
(2)	Carboguard 561 or Carboguard 890	4.0 - 6.0 mils
	Total System Dry Thickness	7.0 - 11.0 mils

 - b. **Sherwin Williams Company, Cleveland, OH 44115**

(1)	Macropoxy 646	3.0 - 5.0 mils
(2)	Macropoxy 646	4.0 - 6.0 mils
	Total System Dry Thickness	7.0 - 11.0 mils

 - c. **Tnemec Company, Inc., Kansas City, MO 64141**

(1)	20-15BL (Tank White) Pota-Pox or 66 Series Epoxoline	3.0 - 5.0 mils
(2)	20-15BL (Tank White) Pota-Pox or 66 Series Epoxoline	4.0 - 6.0 mils
	Total System Dry Thickness	7.0 - 11.0 mils

4. Backfill: After the coatings have cured and been approved by the ENGINEER, the earth is to be backfilled to the original grade or left as required by the OWNER.

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L. Disinfection of the Tank and Piping

1. Standards: The disinfection of the tank and piping shall comply with the following standards:
 - a. American Water Works Association (AWWA) - ANSI/AWWA C652-02, “Disinfection of Water-Storage Facilities.”
 - b. Virginia Department of Health (VDH), “Waterworks Regulations,” - Article 5, Section 12 VAC 5-590-1080, Paragraphs O. through O.2.
2. Cleaning: After curing and prior to disinfecting, the CONTRACTOR shall wash the tank interior with potable water. All equipment, including brooms, brushes, spray equipment, and worker's boots, shall be disinfected before they are used to clean the water storage facility. The CONTRACTOR shall supply an adequate flow of water (20 gpm minimum) with sufficient pressure (60 psi minimum at the nozzle) to wash thoroughly all the interior surfaces, including those surfaces above the top capacity level. All residue shall be removed from the tank and shall be disposed of properly.
3. Disinfection: It is the CONTRACTOR'S responsibility to flush and disinfect the tank until two consecutive satisfactory water samples (collected at least 24 hours apart) are reported from the OWNER'S selected laboratory. Method Two (Part III, Article 5, Section 12 VAC 5-590-1080, Paragraph O 1 b) or Method Three (Part III, Article 5, Section 12 VAC 5-590-1080, Paragraph O 1 c) of the Virginia Department of Health Waterworks Regulations shall be used. The OWNER shall take and send in the samples to the laboratory, but shall assume no responsibility for the sampling technique or the care of the samples. The stored tank water shall comply with current VDH and USEPA standards for organic, inorganic, and biological contaminants as influenced by the operations of the CONTRACTOR.

M. Unanticipated Additional Work (Bid Item 11)

It is believed that these Detailed Technical Specifications adequately describe the Work to be performed. If during the Work, it is found that additional Work is required and it is authorized in writing by the ENGINEER and OWNER, **this Work shall be paid for per single man-hour, including all welding, equipment, normal rigging, labor, supplies, overhead, insurance, and profit. The number of unanticipated additional work man-hours shall be paid for by the unit price in Bid Item 11.**

END OF DETAILED TECHNICAL SPECIFICATIONS

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CLOG-RESISTANT ALUMINUM ROOF VENT 24 INCH DIAMETER

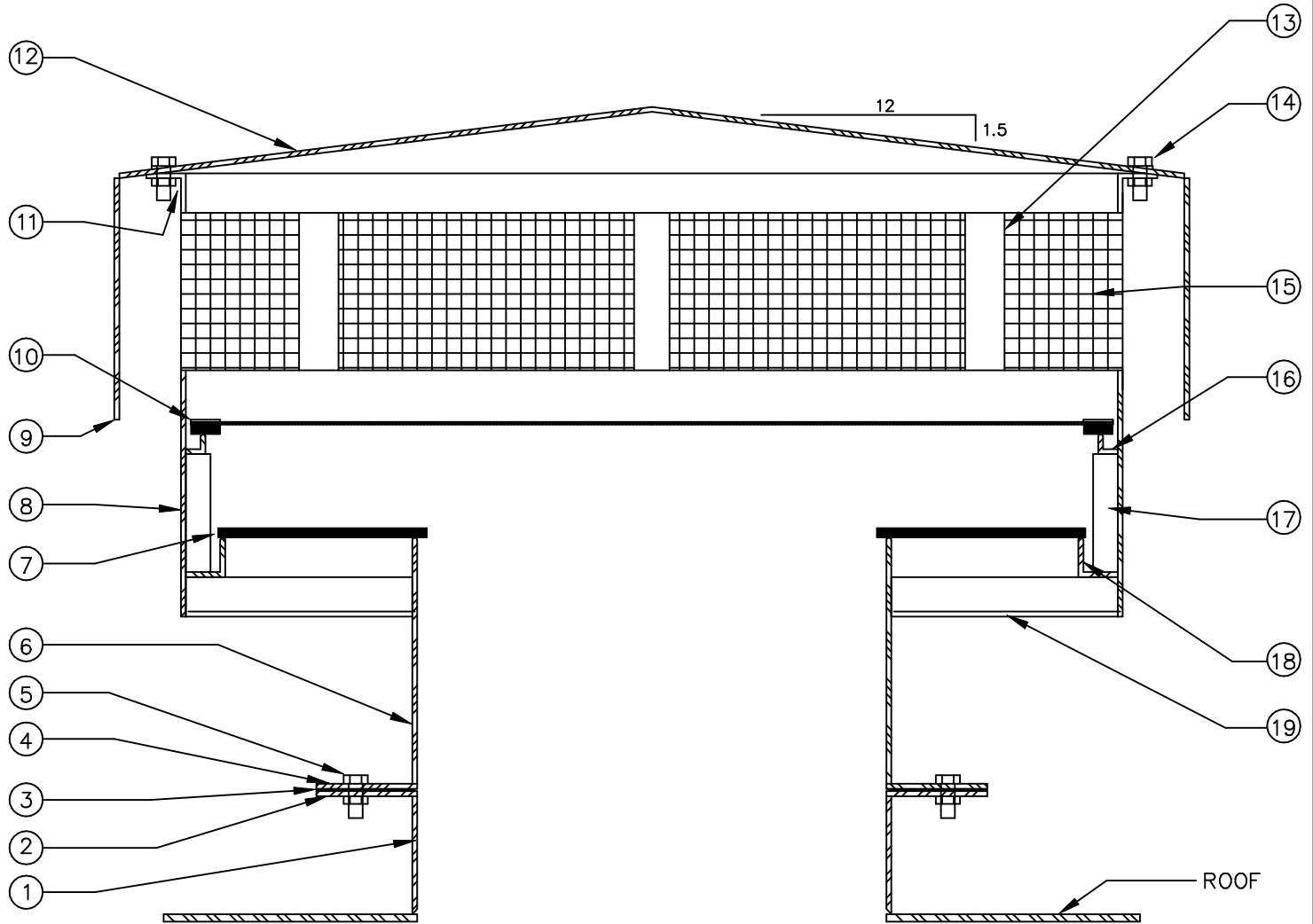


FIGURE - 1

NOTE: INSTALL VENT ASSEMBLY PLUMB $\pm 1/8$ IN. IN 12 IN.

24 IN. DIAMETER ALUMINUM VENT MATERIAL SPECIFICATION FOR FIG. 1

- 1 – Steel plate rolled to 24–1/2 in. O.D. X 6 in. high (min.) X 1/4 in. tk, must project 4 in. above roof (install plumb)
- 2 – Steel plate 34 in. O.D. X 1/4 in. X 24 in. I.D. (must be installed level)
Bolt Circle: (8) 7/16 in. dia. holes @ 15–1/8 in. rad.
- 3 – Rubber gasket 34 in. O.D. X 3/8 in. X 24–1/4 in. I.D.
Bolt Circle: (8) 7/16 in. dia. holes @ 15–1/8 in. rad.
- 4 – Aluminum plate 34 in. O.D. X 3/16 in. X 24 in. I.D.
Bolt Circle: (8) 7/16 in. dia. holes @ 15–1/8 in. rad.
- 5 – (8) 304 S.S. bolts w/ H.H. nuts and (2) flat washers per bolt, 3/8 in. dia.
X 1–1/2 in. long
- 6 – Aluminum plate rolled to 24 in. I.D. X 3/16 in. X 12–1/2 in. long (round one edge)
- 7 – Linear High Density Poly–Ethylene (HDPE) vacuum pallet 45 in. O.D. X 23 in. I.D.
X 1/2 in. tk
- 8 – Aluminum plate rolled to 48 in. O.D. X 12–1/2 in. high X 1/8 in. tk
- 9 – Aluminum plate rolled to 54 in. O.D. X 12 in. high X 1/8 in. tk
- 10 – Pressure pallet, refer to Fig. 2
- 11 – Aluminum 2 in. X 2 in. X 3/16 in., angle rolled to 47–3/4 in. I.D. leg out w/ (4) evenly spaced 9/16 in. dia. holes (refer to Fig. 3)
- 12 – Aluminum cone roof plate 54 in. dia. X 1/8 in. tk (may substitute pressed plate or flanged and dished head)
- 13 – (6) Aluminum bar 2 in. X 3/16 in. X 8 in. long (refer to Fig. 5)
- 14 – (4) 304 S.S. bolts 1/2 in. dia. X 1–1/2 in. long, with (1) flat washer, (1) lock washer, and (1) nut per bolt (refer to Fig. 3) May substitute 1 in. ϕ X 1/2 in. thick bar stock, drilled and tapped, and welded to angle for nut and lock washer.
- 15 – 3/4 in. X .125 in. flattened expanded aluminum (opening size .625 in. x 1.75 in.) formed to 48 in. I.D. X 11 in. high
- 16 – Aluminum angle 1 in. X 1 in. x 3/16 in. rolled to 45–3/4 in. I.D. leg out w/ (8) evenly spaced 3/16 in. dia. holes located midway on the horizontal leg
- 17 – (6) Aluminum bar 6 in. X 1–1/4 in. X 1/8 in.
- 18 – Aluminum angle 2 in. X 2 in. X 3/16 in. rolled to 43–3/4 in. I.D. leg out w/ (8) evenly spaced 3/16 in. dia. holes located midway on the horizontal leg
- 19 – (6) Aluminum angle 2 in. X 2 in. X 3/16 in. X 11–5/8 in. long, oriented leg–down

Operating Instructions:

- 1) Annually inspect and clean out the vent interior.
- 2) More frequent inspection and cleaning may be required if unusually severe dust conditions exist.
- 3) Severe icing could cause freezing of the pallets rendering the pallets inoperative. More frequent inspections are required during freezing conditions. The vent and pallets should be thawed if necessary.
- 4) The pallets and interior surfaces of the vent should not be painted. If the exterior surfaces are to be painted, TIC recommends these surfaces be hand–roughened with sand paper and solvent washed prior to coating. A primer acceptable for this type of surface should be used.
- 5) The vacuum and pressure–relief pallets should be removed during cleaning and painting of the tank to prevent them from clogging. The Owner's representative should verify the proper re–installation of the pallets prior to placing the tank back into service.

Note: All steel items to be made from A36, or A283 Grades A, B, or C steel unless otherwise specified.

All aluminum items to be made from Grade 3003–H14 or H16 formable, unless otherwise specified.

All dimensions to \pm 1/8 in. tolerance except bolt hole diameters to \pm 1/32 in. tolerance.

SHEET 2 OF 4

PRESSURE PALLET – 24 INCH DIAMETER VENT

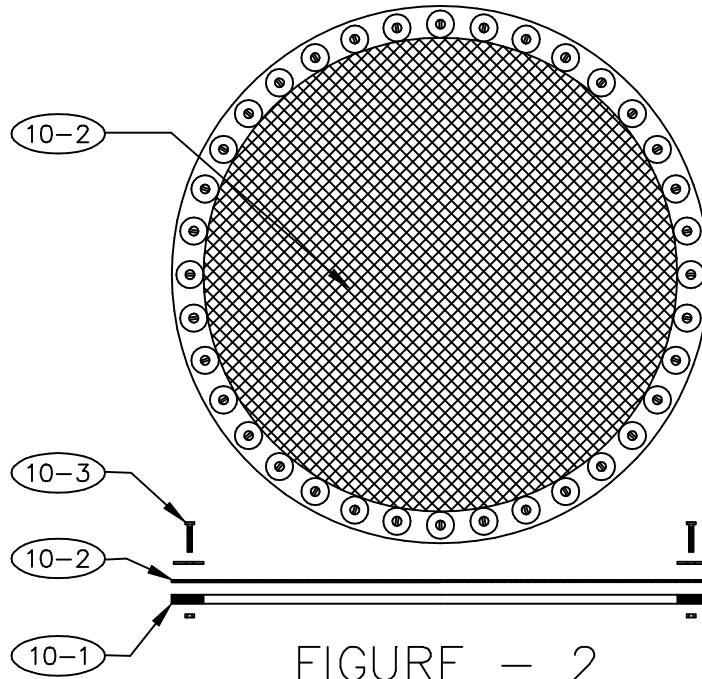


FIGURE – 2

- 10-1 – HDPE ring 47 in. O.D. X 43 in. I.D. X 1/2 in. tk
Bolt circle: (36) 1/4 in. dia. holes and evenly spaced @ rad. = 22-1/2 in.
- 10-2 – 16 X 16 316 stainless steel wire mesh 46 in. dia. (0.018 – 316 S.S. wire screen)
Bolt circle: (36) 1/4 in. dia. holes evenly spaced @ rad. = 22-1/2 in.
- 10-3 – (36) No. 12 pan head 316 S.S. machine screws w/ nuts and fender washers,
1-1/2 in. long

VENT COVER CONNECTION

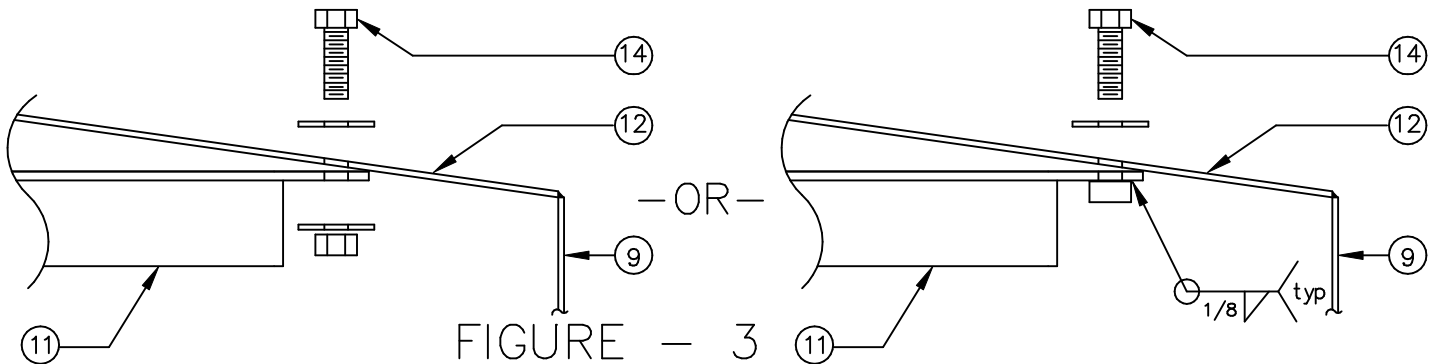


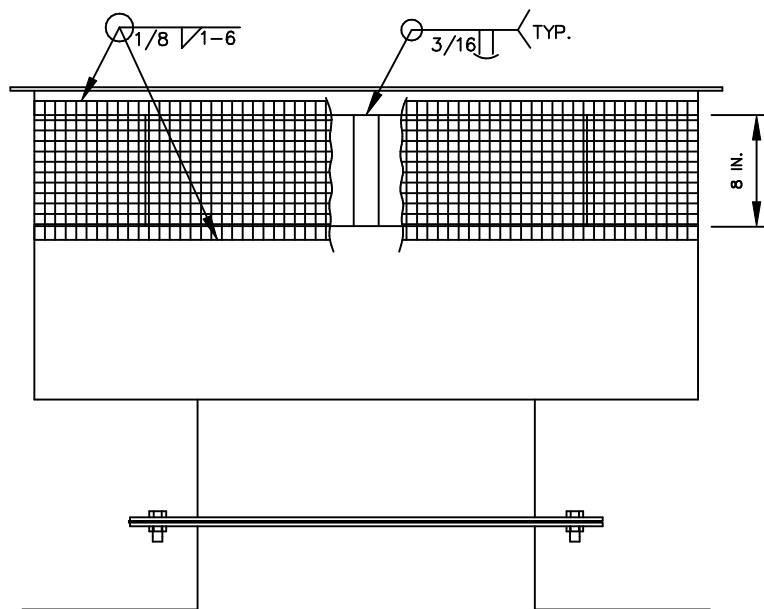
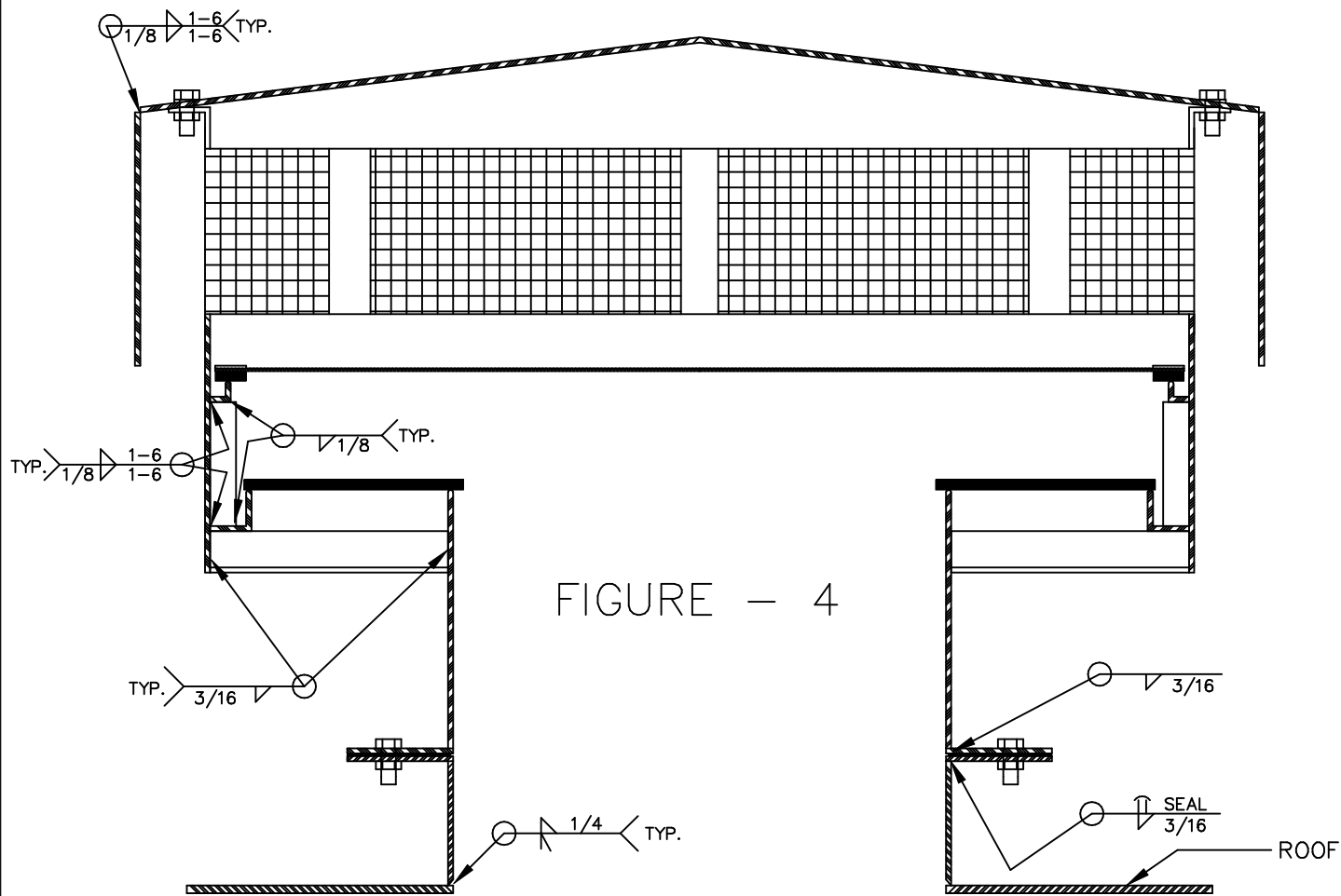
FIGURE – 3

- 9 – Aluminum plate rolled to 54 in. O.D. X 12 in. high X 1/8 in. tk
- 11 – Aluminum 2 in. X 2 in. X 3/16 in., angle rolled to 47-3/4 in. I.D. leg out w/ (4) evenly spaced 9/16 in. dia. holes
- 12 – Aluminum cone roof plate 54 in. dia. X 1/8 in. tk (may substitute pressed plate or flanged and dished head)
- 14 – (4) 304 S.S. bolts 1/2 in. dia. X 1-1/2 in. long, with (1) flat washer, (1) lock washer, and (1) nut per bolt (refer to Fig. 3) May substitute 1 in. ϕ X 1/2 in. thick bar stock, drilled and tapped, and welded to angle for nut and lock washer.

NOT TO SCALE

SHEET 3 OF 4

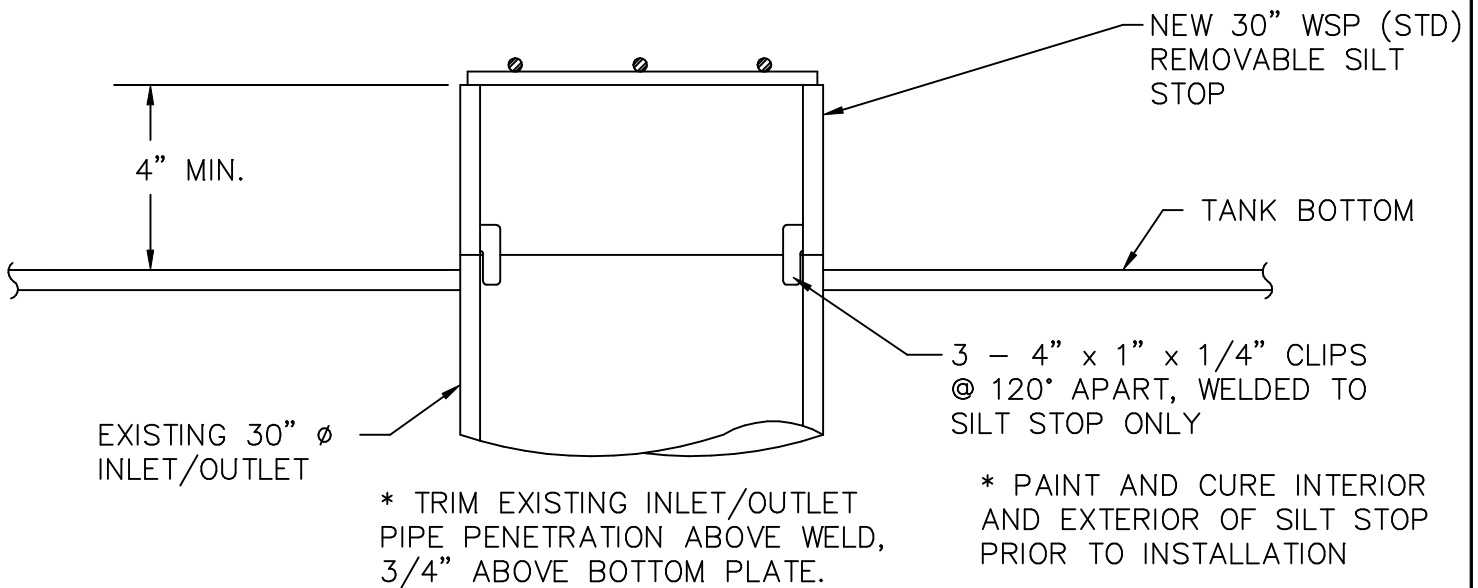
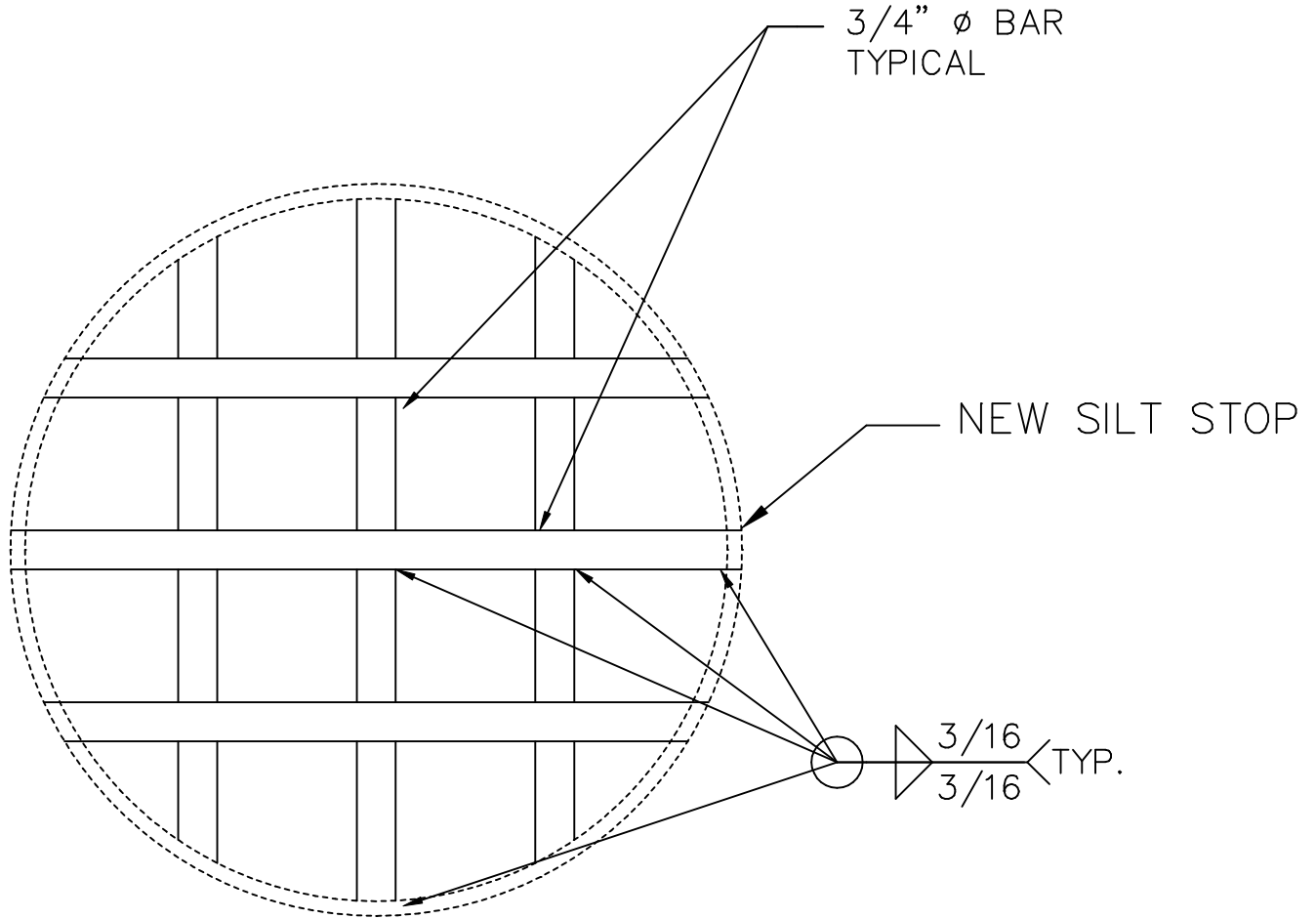
WELD SPECIFICATIONS – 24 INCH DIAMETER VENT



NOT TO SCALE

SHEET 4 OF 4

REMOVABLE SILT STOP WITH BAR GRATE



EXISTING 30" ϕ
INLET/OUTLET

4" MIN.

* TRIM EXISTING INLET/OUTLET
PIPE PENETRATION ABOVE WELD,
3/4" ABOVE BOTTOM PLATE.

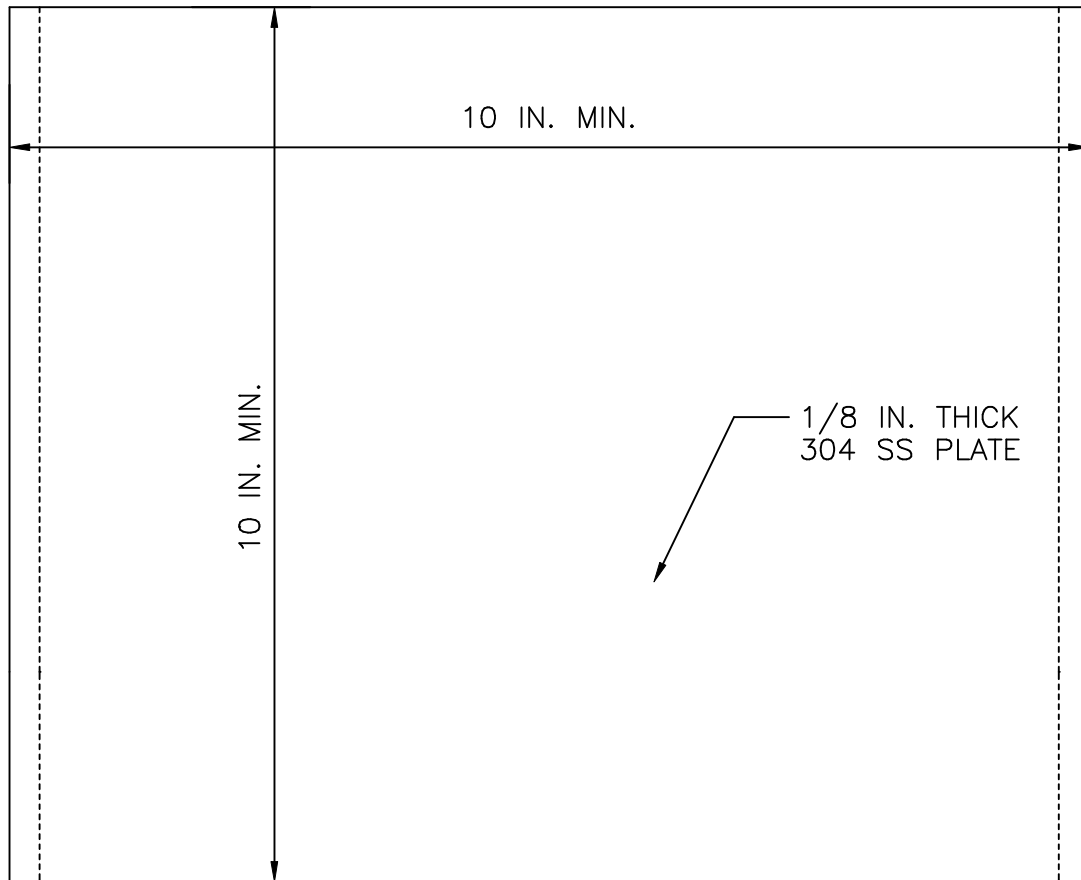
3 - 4" x 1" x 1/4" CLIPS
@ 120° APART, WELDED TO
SILT STOP ONLY

* PAINT AND CURE INTERIOR
AND EXTERIOR OF SILT STOP
PRIOR TO INSTALLATION

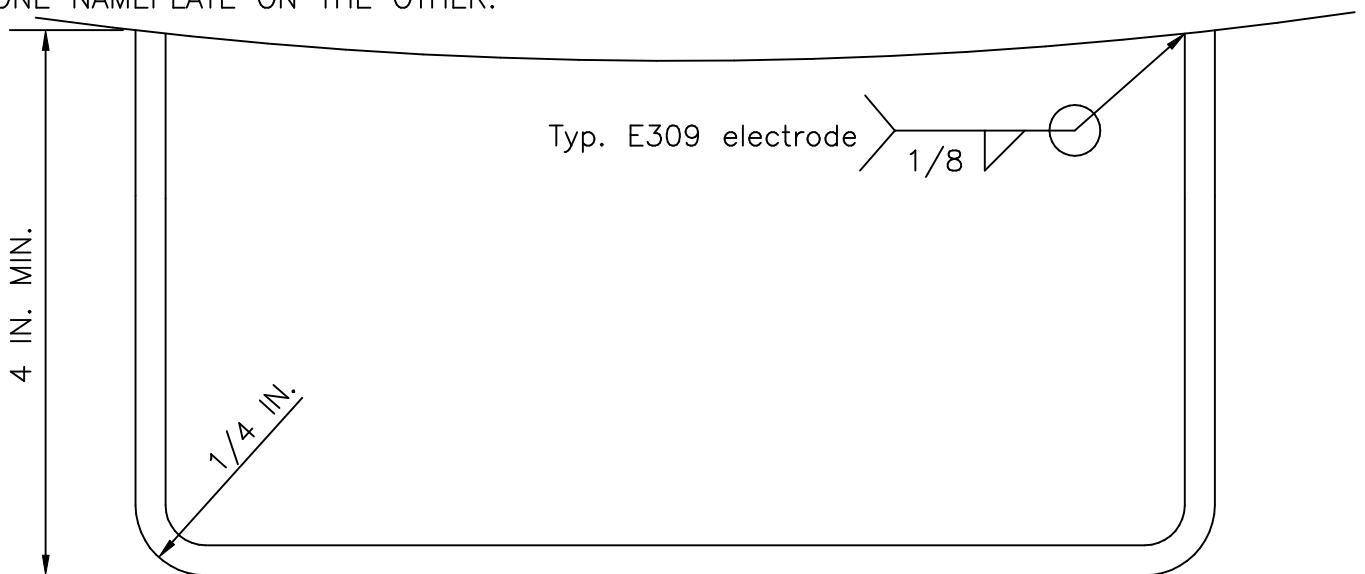
ROUND ALL EDGES TO MIN.
1/8" RADIUS

NOT TO SCALE

NAMEPLATE ATTACHMENT BRACKETS

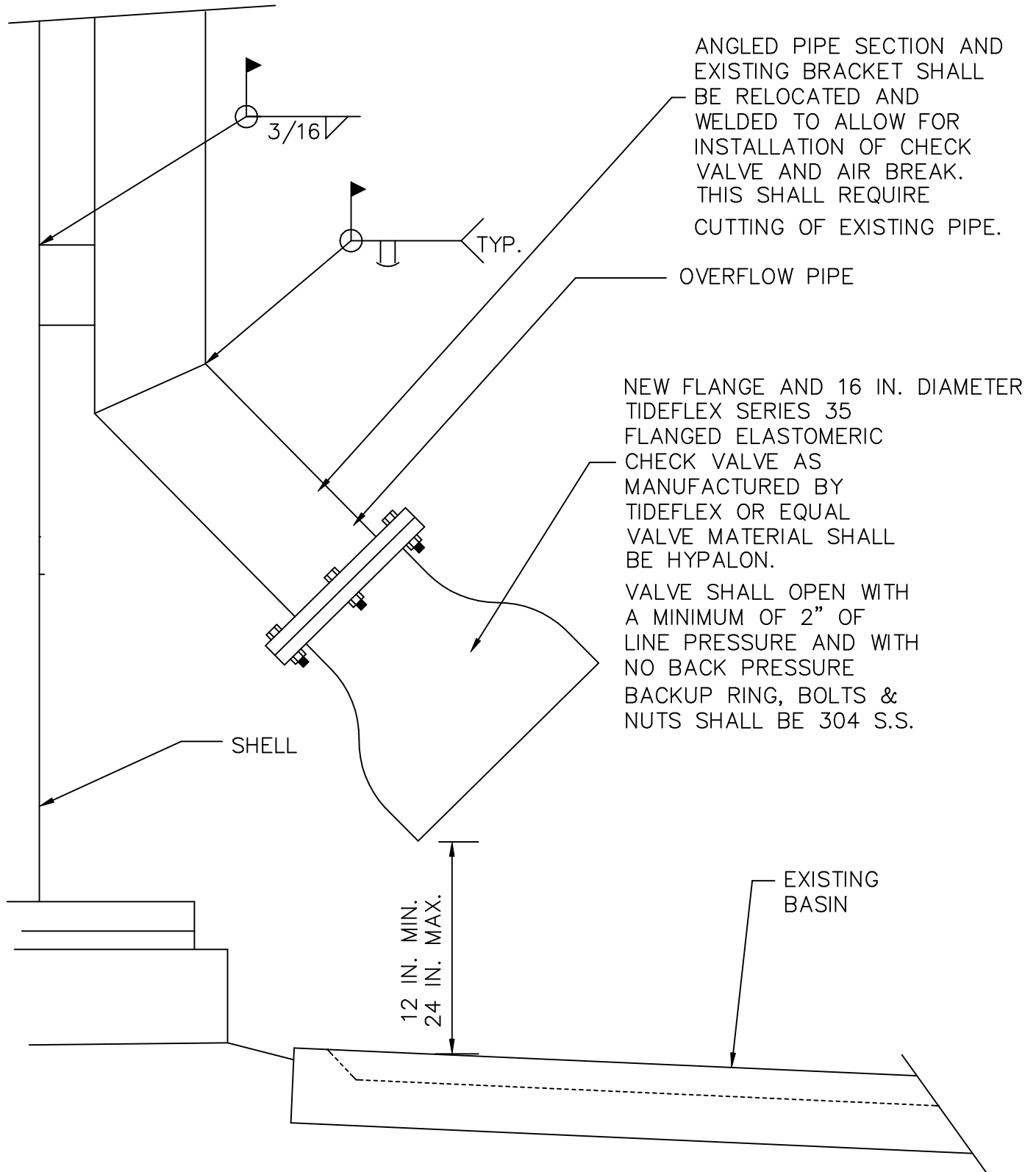


MOUNT NAMEPLATES TO BRACKETS WITH NO. 12 STOVE BOLTS (304 S.S.)
CLEAN, PAINT AND CURE BRACKET PRIOR TO INSTALLING NAMEPLATES.
INSTALL TWO BRACKETS WITH TWO NAMEPLATES INSTALLED ON ONE BRACKET AND
ONE NAMEPLATE ON THE OTHER.



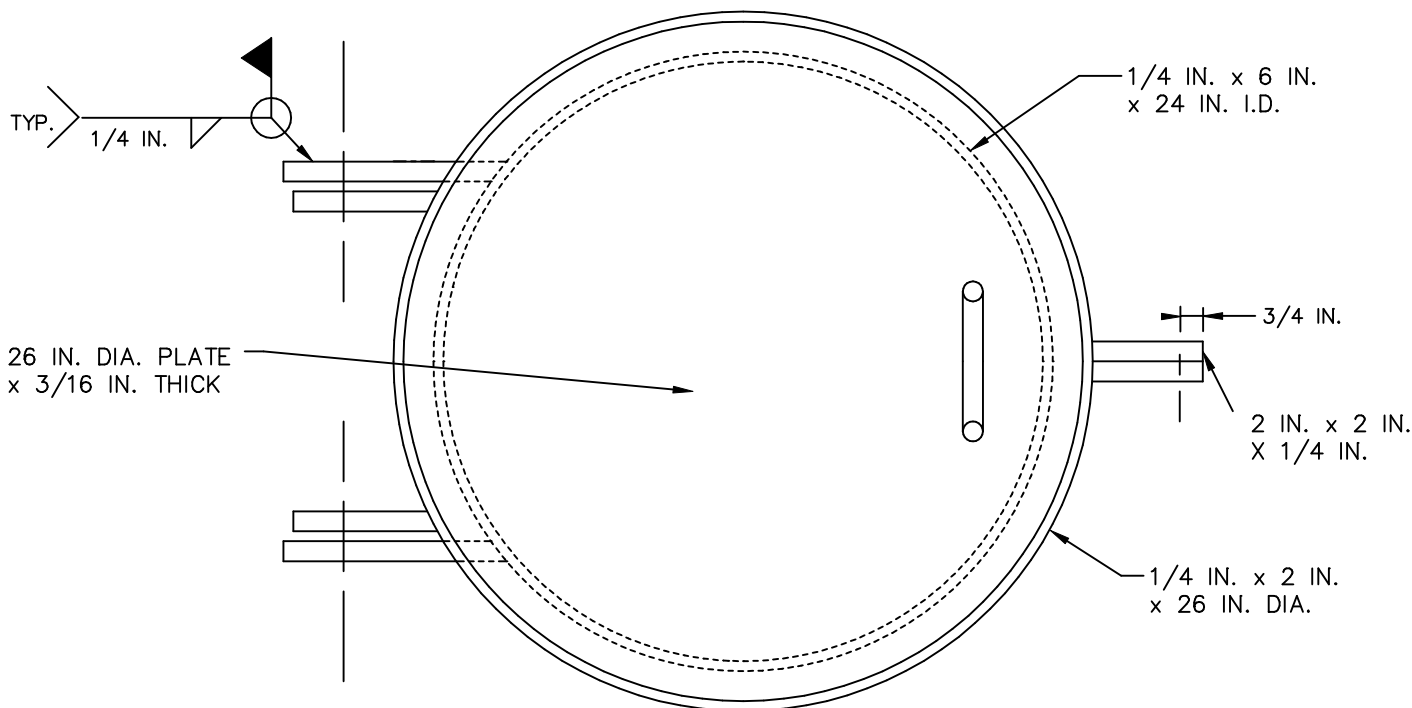
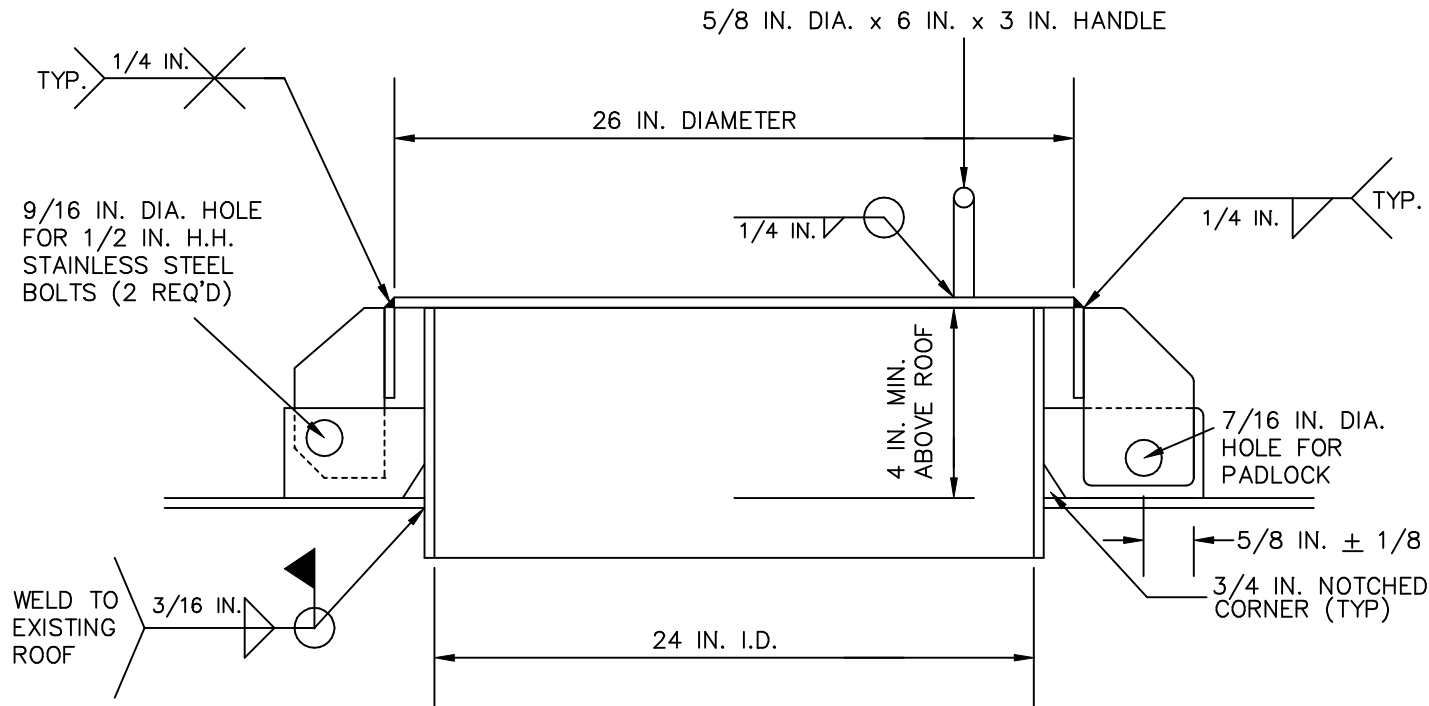
DRILL ALL HOLES FOR ATTACHMENT OF NAMEPLATE TO BRACKET PRIOR TO CLEANING.
PROTECT NAMEPLATES FROM DAMAGE DURING CLEANING.
PROTECT NAMEPLATES FROM APPLICATION OF COATING ON EXPOSED SURFACE.

DISCHARGE END OF OVERFLOW PIPE



NOT TO SCALE

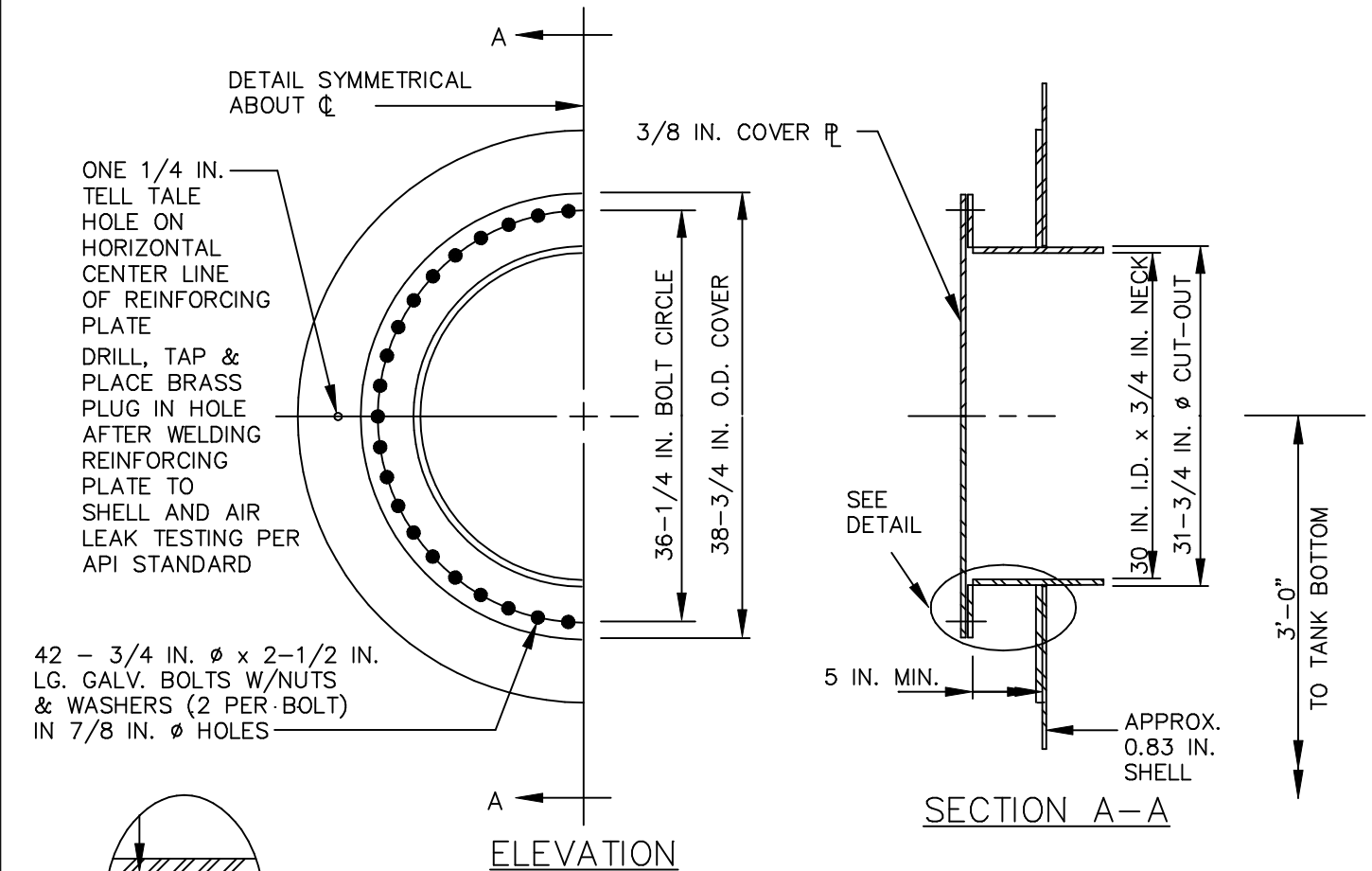
24 INCH ROUND ROOF MANHOLE



COVER MUST OPEN AT LEAST 45° PAST VERTICAL
LOCATE MANHOLE BETWEEN ROOF RAFTERS

NOT TO SCALE

30 INCH DIAMETER MANHOLE SHELL



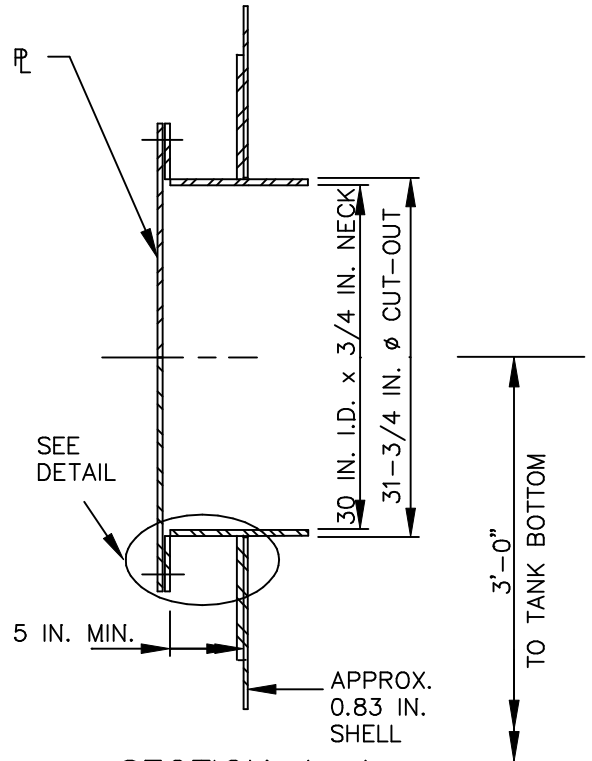
42 - 3/4 IN. ϕ x 2-1/2 IN.
LG. GALV. BOLTS W/NUTS
& WASHERS (2 PER BOLT)
IN 7/8 IN. ϕ HOLES

ONE 1/4 IN.
TELL TALE
HOLE ON
HORIZONTAL
CENTER LINE
OF REINFORCING
PLATE
DRILL, TAP &
PLACE BRASS
PLUG IN HOLE
AFTER WELDING
REINFORCING
PLATE TO
SHELL AND AIR
LEAK TESTING PER
API STANDARD

DETAIL SYMMETRICAL
ABOUT ϕ

3/8 IN. COVER PL

36-1/4 IN. BOLT CIRCLE
38-3/4 IN. O.D. COVER

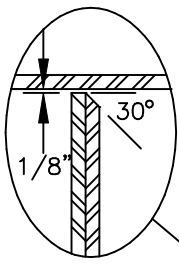


SEE
DETAIL

5 IN. MIN.

APPROX.
0.83 IN.
SHELL

3'-0"
TO TANK BOTTOM



3/4 IN. PLATE
30 IN. I.D. x 10 IN. LG.

3 IN. MIN.
ON VERT.
CENTERLINE

3/8
3/8

3/8 IN. FLANGE
38-3/4 IN. O.D.
31-1/2 IN. I.D.

COMPLETE
PENETRATION
(SEE AWS TC-U4a)

63-1/4 IN. O.D. x 31-3/4 IN. I.D.
3/8 IN. THICK RING, ROLL
TO SHELL RADIUS

APPROX. 0.83 IN.
SHELL

3/8

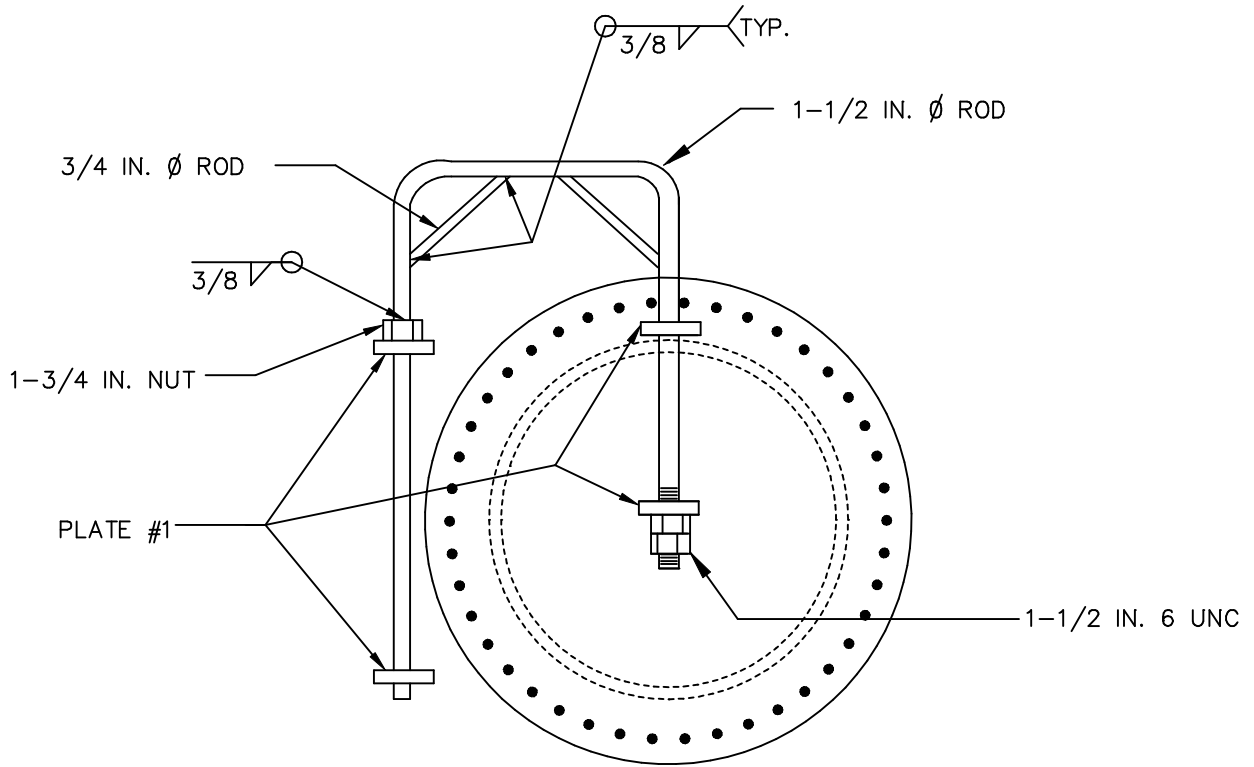
DETAIL

NOTES:

1. MANHOLE COVER TO HAVE 2 LIFTING HANDLES OF 5/8 IN. DIAMETER ROD.
2. MANHOLE GASKET TO BE 1/4 IN. THICK NEOPRENE, FULL FACE.
3. FILLETS AND OTHER WELDS SHALL BE A MINIMUM OF 10 IN. AWAY FROM BUTT-WELDED SEAMS AND 3 IN. AWAY FROM SHELL-TO-BOTTOM WELD (SEE API 650).
4. BEVEL EDGE OF CUT-OUT AS SHOWN.
5. ROUND AND GRIND ALL SHARP CORNERS.
6. ALL MATERIAL TO BE ASTM A36, UNLESS OTHERWISE INDICATED.
7. ALL WELDING ROD SHALL BE E70XX.

NOT TO SCALE

SHELL MANHOLE DAVIT



REINFORCING PLATE NOT SHOWN FOR CLARITY.

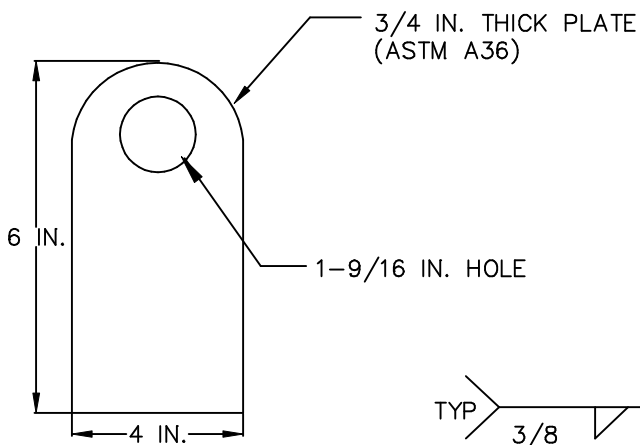
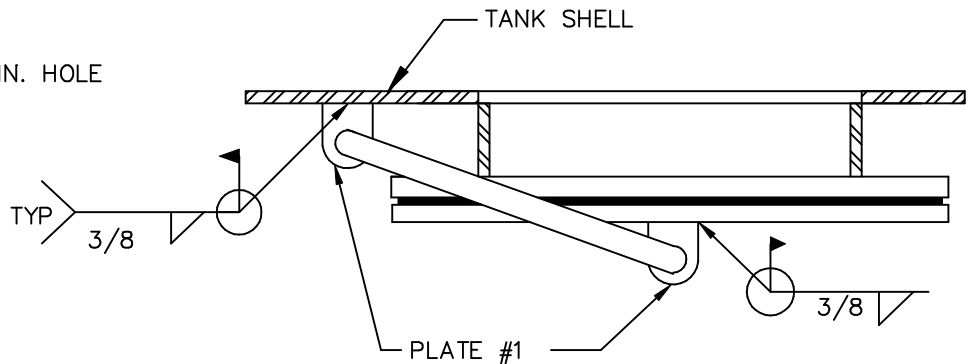
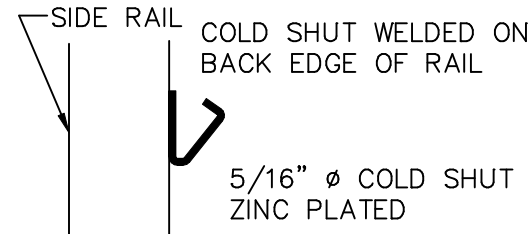


PLATE #1
(4 REQ'D)



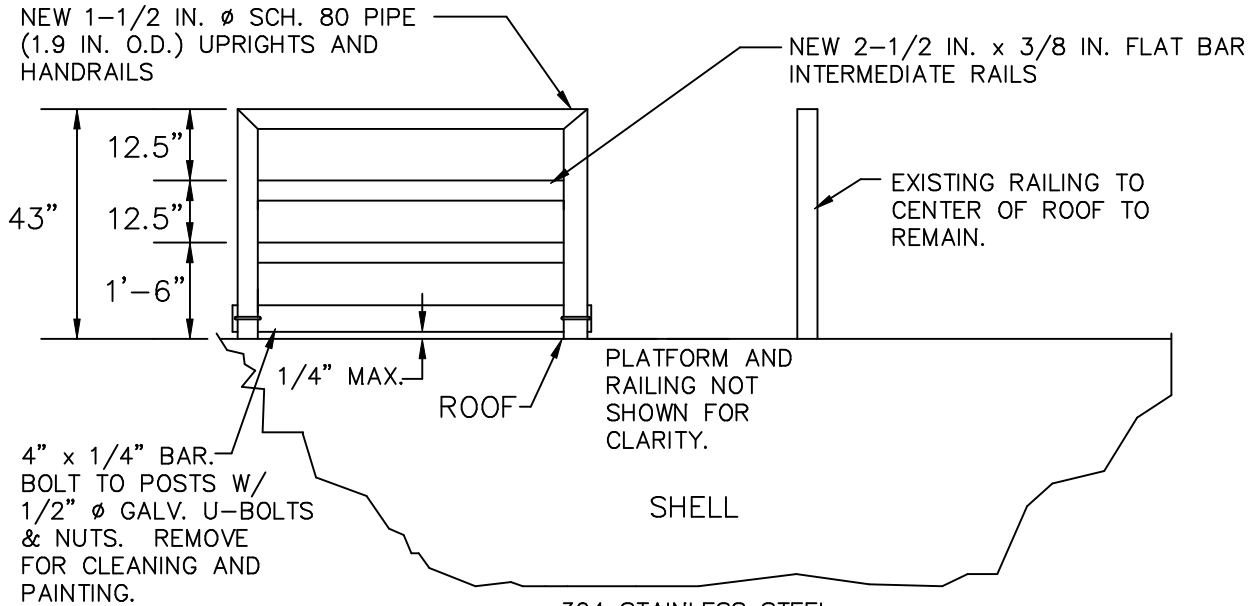
NOT TO SCALE

PLATFORM AND ROOF SAFETY RAILINGS



ALL WELDED INTERSECTIONS TO BE SEAL WELDED ALL AROUND

CHAIN HOOK DETAIL

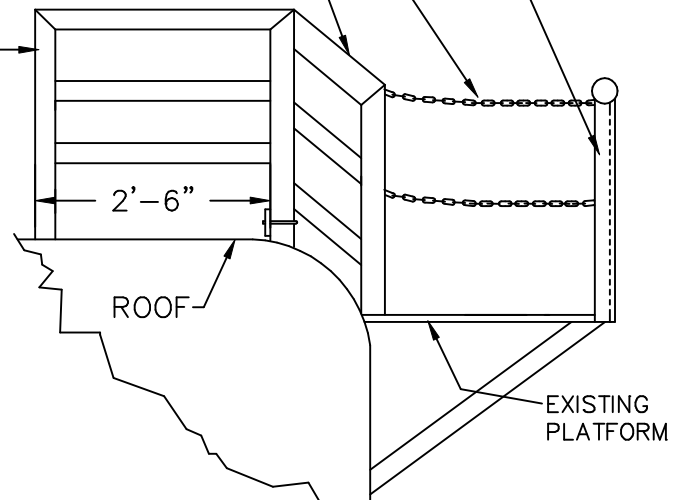
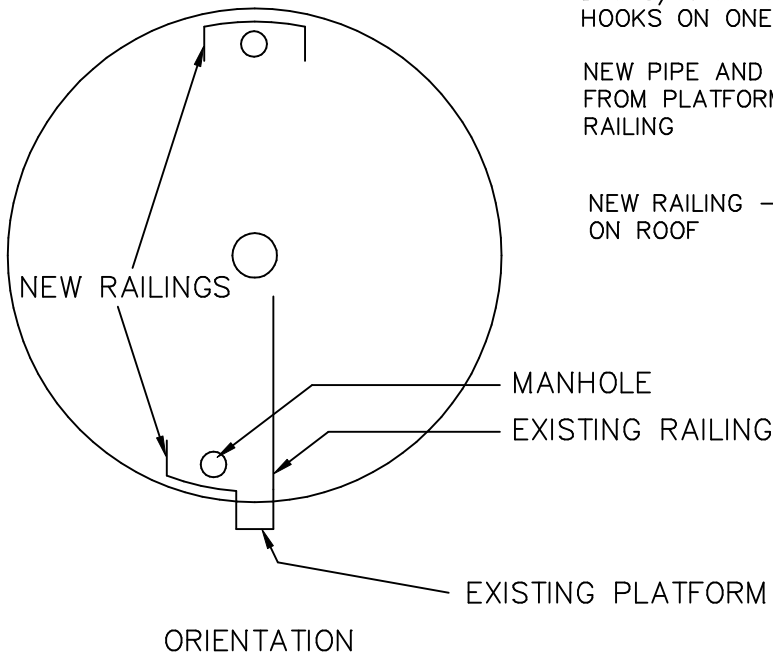


304 STAINLESS STEEL SAFETY CHAINS AT HANDRAIL AND MID-RAIL LEVELS. LINK DIA. 3/16 IN. MIN. PROVIDE HOOKS ON ONE END.

NEW 2 IN. x 2 IN. x 3/8 IN. ANGLE UPRIGHT

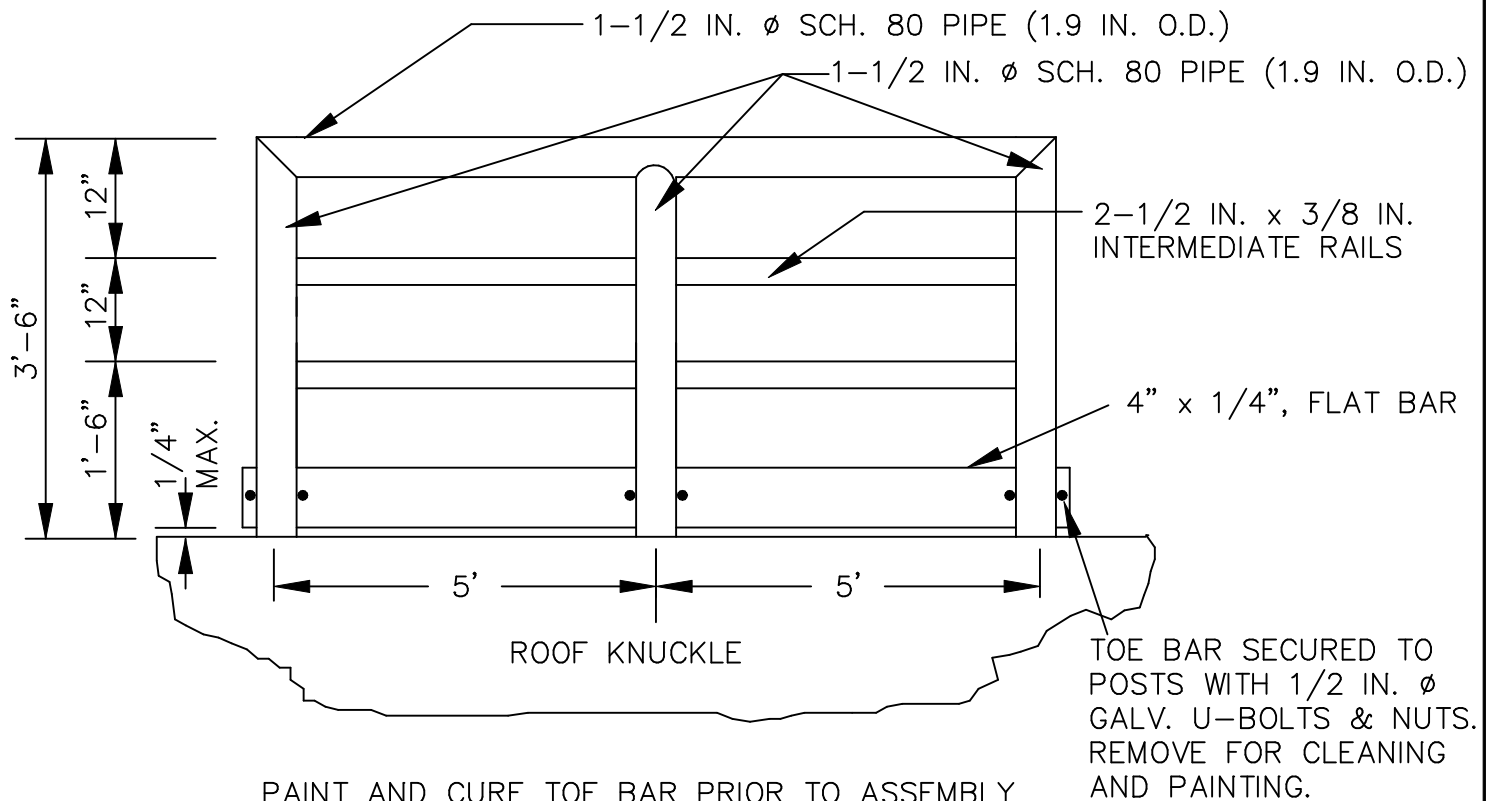
NEW PIPE AND FLAT BAR RAILING FROM PLATFORM TO NEW ROOF RAILING

NEW RAILING ON ROOF

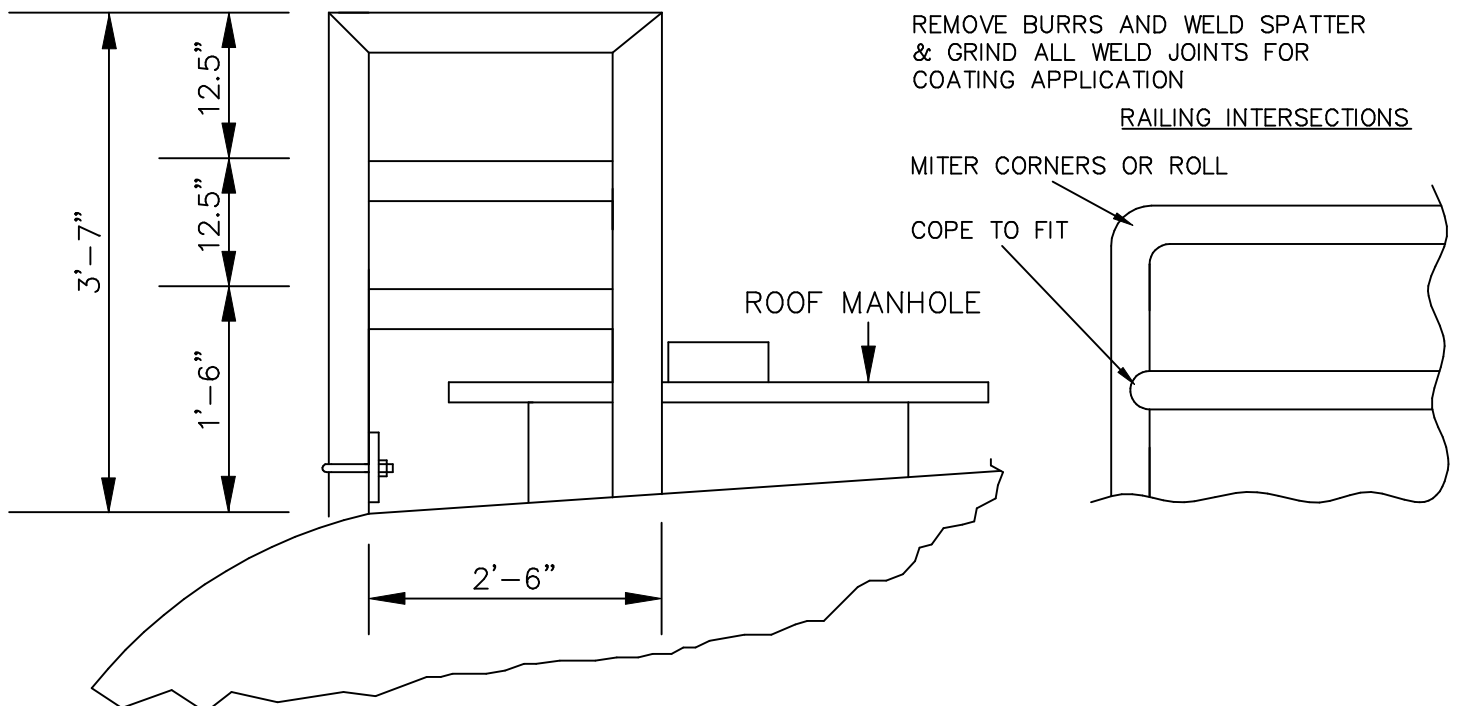


NOT TO SCALE

ROOF MANHOLE SAFETY RAILING



PAINT AND CURE TOE BAR PRIOR TO ASSEMBLY
 ALL WELDS 3/16 IN. MIN. CONTINUOUS FILLET WELDS
 ROLL HANDRAIL, INTERMEDIATE RAILS, AND TOE BAR TO MATCH CURVATURE OF SHELL (MINUS LENGTH OF ROOF KNUCKLE)



NOT TO SCALE

SUMMARIZED TANK INFORMATION SHEET

“COPELAND PARK TANK”

ENGINEER: Tank Industry Consultants
TANK OWNER: Newport News Waterworks
CAPACITY: 5,000,000 gallons
HEIGHT: approx. 17 ft to TCL
DIAMETER: approx. 225 ft
TYPE: welded steel ground storage tank with column-and-rafter supported roof including a sphericon knuckle
ERECTION DATE: 1965, Chicago Bridge & Iron Company
CONTRACT NUMBER: 9-3411
TANK LOCATION: Chestnut Avenue and Mercedes Drive in Newport News, Virginia

PAINT SYSTEMS: Generic Type (appeared to be the following)

Exterior: epoxy/polyurethane
Interior: epoxy

Atomic Absorption:

	Cadmium		Chromium		Lead	
	mg/kg	percent	mg/kg	percent	mg/kg	percent
Exterior	<25	<0.0025%	1,300	0.13%	5,480	0.548%
Interior	<25	<0.0025%	<250	<0.025%	<250	<0.025%

Samples of the exterior and interior coatings were sent to a laboratory for atomic absorption analyses only to determine if there is lead, chromium, and cadmium present in the coating samples. To limit the damage to the existing coatings, only small areas were tested. This small number of samples and the difficulty of retrieving all primer from the steel profile may cause the tests performed to not accurately represent the total coating system. Variations in thickness, types of coatings applied, and the interim cleaning and painting operations will also affect the actual readings. The reliability of the results is also dependent on the amount of primer included in the sample. The Consumer Product Safety Commission specifies that an amount greater than 600 mg/kg (0.06%) lead is considered potentially hazardous.

DISCLAIMER: The information contained in this Summarized Tank Information Sheet is not considered technical in nature. Therefore, the Contractor is not entitled to rely on any information contained in such reports. Interpretation of this data is the responsibility of the Bidder. Such information is made available to the Bidder as a courtesy only. It is further agreed and understood that the Bidder or the Contractor will not use any information made available to him, or obtained by any examination made by him, in any manner as a basis or ground of claim or demand of any nature against the Owner or Engineer arising from or by reason of any variance which may exist between the information offered and the actual materials and structures encountered during the construction work.

REFERENCES: A complete scope of Work can be found in the Detailed Technical Specifications. Additional information about the tank may be found in the evaluation report (TIC 05.084.E204.13) dated May 24-27, 2005. The information contained in this evaluation report is also not considered technical in nature.

TANK INDUSTRY CONSULTANTS
PRE-JOB SOIL SAMPLING PROCEDURE & CHAIN OF CUSTODY FORM

JOB NUMBER TIC 08.163.E204.13

OWNER Newport News Waterworks

PROJECT LOCATION Newport News, Virginia **CONTRACTOR** _____

OBJECTIVE - To obtain sets of soil samples from the job site vicinity prior to the start of work at the site, identify the samples, and have atomic absorption testing for total lead performed. The actual number of samples required shall be in accordance with the Soil Sampling paragraph of the **Detailed Technical Specifications**.

SAMPLING PROCEDURE

1. Document in a diagram below the location of each of the soil sampling test sites with exact measurements from fixed objects such as tank foundation, corner of valve vault, fence post, etc. The locations should be sporadically located within the limits of the tank site in accordance with the Soil Sampling paragraph of the **Detailed Technical Specifications**.
2. One set of soil samples consists of (5) five 3/4 inch diameter plugs, by 1/2 inch deep, taken from a (1) one square foot area. All (5) five plugs are to be deposited in one zip-lock plastic bag.

SAMPLE NUMBER _____ **DATE** _____

I certify that the above samples were taken in compliance with the above sampling procedure, at the locations as drawn below.

PROJECT FOREMAN _____ **DATE** _____

FIELD OBSERVER _____ **DATE** _____

(Draw diagram of site and locations, with exact measurements)

CHAIN OF CUSTODY

I certify that the above samples were delivered to: _____

By _____ **DATE** _____

Received _____ **DATE** _____

TANK INDUSTRY CONSULTANTS
POST-JOB SOIL SAMPLING PROCEDURE & CHAIN OF CUSTODY FORM

JOB NUMBER TIC 08.163.E204.13

OWNER Newport News Waterworks

PROJECT LOCATION Newport News, Virginia **CONTRACTOR** _____

OBJECTIVE - After the work is completed, obtain an additional set of soil samples from **each** of the original locations, identify the samples, and have atomic absorption testing for total lead performed.

SAMPLING PROCEDURE

1. Document in a diagram below the location of each of the soil sampling test sites with exact measurements from fixed objects such as tank foundation, corner of valve vault, fence post, etc. The locations should be sporadically located within the limits of the tank site in accordance with the Soil Sampling paragraph of the **Detailed Technical Specifications**.
2. One set of soil samples consists of (5) five 3/4 inch diameter plugs, by 1/2 inch deep, taken from a (1) one square foot area. All (5) five plugs are to be deposited in one zip-lock plastic bag.

SAMPLE NUMBER _____ **DATE** _____

I certify that the above samples were taken in compliance with the above sampling procedure, at the locations as drawn below.

PROJECT FOREMAN _____ **DATE** _____

FIELD OBSERVER _____ **DATE** _____

(Draw diagram of site and locations, with exact measurements)

CHAIN OF CUSTODY

I certify that the above samples were delivered to: _____

By _____ **DATE** _____

Received _____ **DATE** _____

APPLICATION FOR PAYMENT NO. _____

To: Newport News Waterworks (OWNER)
From: _____ (CONTRACTOR)
Contract: Repairing and Repainting one 5,000,000 Gallon Steel Ground Storage Tank, "Copeland Park Tank"
OWNER'S Contract No. _____ ENGINEER'S Project No. 08.163.E204.13
For Work accomplished through the date of: _____

1.	Original Contract Price:	\$ _____
2.	Net Change by Change Orders and Written Amendments (+ or -):	\$ _____
3.	Current Contract Price (1 plus 2):	\$ _____
4.	Total Completed and stored to date:	\$ _____
5.	Retainage (per Agreement):	
	_____ % of completed Work: \$ _____	
	_____ % of stored material: \$ _____	
	Total Retainage:	\$ _____
6.	Total completed and stored to date less retainage (4 minus 5):	\$ _____
7.	Less previous Application for Payments:	\$ _____
8.	DUE THIS APPLICATION (6 MINUS 7):	\$ _____

Accompanying Documentation:

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied on account to discharge CONTRACTOR'S legitimate obligations incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive; (2) title of all Work, materials, and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a Bond acceptable to OWNER indemnifying OWNER against any such Lien, security interest or encumbrance); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective.

Dated _____
CONTRACTOR

By: _____
State of _____
County of _____
Subscribed and sworn to before me this _____
day of _____, _____

Notary Public
My Commission expires: _____

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Dated _____
ENGINEER

By: _____

APPLICATION FOR PAYMENT

INSTRUCTIONS

A. GENERAL INFORMATION

The sample form of Schedule of Values is intended as a guide only. Many projects require a more extensive form with space for numerous items, descriptions of Change Orders, identification of variable quantity adjustments, summary of materials and equipment stored at the site, and other information. It is expected that a separate form will be developed by Engineer and Contractor at the time Contractor's Schedule of Values is finalized. Note also that the format for retainage must be changed if the Contract permits (or the law provides), and Contractor elects to deposit securities in lieu of retainage. Refer to Article 11.3 of the General Conditions for provisions concerning payments to Contractor.

B. COMPLETING THE FORM

The Schedule of Values, submitted and reviewed as provided in paragraphs 11.1 and 11.2 of the General Conditions, should be reproduced as appropriate in the space indicated on the Application for Payment form. Note that the cost of materials and equipment is often listed separately from the cost of installation. Also, note that each Unit Price is deemed to include Contractor's overhead and profit.

All Change Orders affecting the Contract Price should be identified and included in the Schedule of Values as required for progress payments.

The form is suitable for use in the Final Application for Payment as well as for Progress Payments; however, the required accompanying documentation is usually more extensive for final payment. All accompanying documentation should be identified in the space provided on the form.

C. LEGAL REVIEW

All accompanying documentation of a legal nature, such as Lien waivers, should be reviewed by an attorney, and Engineer should so advise Owner.

Project: Copeland Park Tank, Newport News, Virginia

TIC Job Number: 08.163.E204.13

Period From _____ to _____

Application No. _____ Date: _____

Description of Work	Unit Price	Estimated Quantity	Scheduled Value	Work Completed		%	Total Completed & Stored to Date	Balance to Finish	Retainage
				Previous Application	This Period				
1.	\$		\$	\$	\$		\$	\$	\$
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									
25.									
26.									
27.									
28.									
29.									
30.									
TOTAL			\$	\$	\$		\$	\$	\$

Note: Total Schedule of Values Amount should equal the current Contract Price.

SUBMITTAL CHECK LIST

<u>Sub. No.</u>	<u>Item</u>	<u>Submit By</u>	<u>Date Received</u>	<u>Date Reviewed</u>	<u>Previous Sub. No.</u>	<u>Status</u>
1.	Proposed Method of Containment w/ P.E. Stamp	CD + 15 days				
2.	Details of Reinforcing Pads Between Tank and Attachments	CD + 15 days				
3.	Name of Competent Person	CD + 15 days				
4.	A letter (on company letterhead) from the Contractor stating/certifying that the Contractor's Competent Person(S) has/have received training in accordance with local, state, and federal regulations	CD + 15 days				
5.	Documentation of Training for Support Personnel	CD + 15 days				
6.	Welder(s) Certification (submitted at site)	prior to welding				
7.	Medical Surveillance Program	CD + 15 days				
8.	Work Safety Program	CD + 15 days				
9.	Personnel Air Monitoring Program	CD + 15 days				
10.	Confined Space Entry Procedure	CD + 15 days				
11.	Traffic Control Plan	CD + 15 days				
12.	Public Safety Plan	CD + 15 days				
13.	Bar Chart or Progress Schedule	CD + 15 days				
14.	Schedule of Values	CD + 15 days				
15.	Submittal for Times of Work	CD + 15 days				
16.	Descriptive written plan concerning how abrasive and/or paint damage to automobiles and property will be handled, including a process for quick removal of the abrasive or paint, and who will do the Work	CD + 15 days				
17.	Details of repairs if different from drawings	CD + 20 days				
18.	Exterior Prime Coat - Supplier, Type, PDS	CD + 20 days				
19.	Exterior Intermediate Coat - Supplier, Type, PDS	CD + 20 days				
20.	Exterior Finish Coat - Supplier, Type, PDS	CD + 20 days				
21.	Exterior Intermediate Color and Finish Color	CD + 20 days				
22.	Interior Dry Prime Coat - Supplier, Type, PDS	CD + 20 days				
23.	Interior Dry Finish Coat - Supplier, Type, PDS	CD + 20 days				
24.	Interior Prime Coat - Supplier, Type, PDS	CD + 20 days				
25.	Interior Finish Coat - Supplier, Type, PDS	CD + 20 days				
26.	Concrete First Coat - Supplier, Type, PDS	CD + 20 days				
27.	Concrete Second Coat - Supplier, Type, PDS	CD + 20 days				
28.	Inaccessible Area Prime Coat - Supplier, Type, PDS	CD + 20 days				
29.	Seam Sealer - Supplier, Type, PDS	CD + 20 days				
30.	Flexible Sealant - Supplier, Type, PDS	CD + 20 days				
31.	Solventless, Underwater-Curing Epoxy - Supplier, Type, PDS	CD + 20 days				
32.	Thinners - Supplier, Type, MSDS	CD + 20 days				
33.	Disinfectant - Supplier, Type, MSDS	CD + 20 days				
34.	Abrasives - Supplier, Type, MSDS, and Size	CD + 20 days				
35.	Abrasives - letter from coating manufacturer's HQ stating the Resulting Abrasive Profile is acceptable	CD + 20 days				
36.	Concrete Repair Material - Supplier, Type, MSDS	CD + 20 days				
37.	Grout - Supplier, Type, MSDS	CD + 20 days				
38.	Waste Hauler Spill Contingency Plan	CD + 20 days				
39.	Plan for Forced Ventilation for Interior Wet Coating Cure	CD + 20 days				

Status Abbreviations ** NEN = No Exceptions Noted, MCN = Make Corrections Noted, R&R = Revise & Resubmit, REJ = Rejected, See Comments,
NAR = No Action Required by Engineer or Owner
CD = Contract Date --- All Submittals Shall be Received Prior to Contractor Starting Work

SUBMITTAL CHECK LIST

<u>Sub. No.</u>	<u>Item</u>	<u>Submit By</u>	<u>Date Received</u>	<u>Date Reviewed</u>	<u>Previous Sub. No.</u>	<u>Status</u>
40.	Compliance with ANSI/NSF Standard 61 (if not stated on PDS)	CD + 20 days				
41.	Certification from manufacturer that Alternate Coating Materials Meet the Specifications	CD + 20 days				
42.	Certification from manufacturer that all coating materials contain less than 0.06% by weight of lead (or any lead compounds), cadmium, and chromium in the cured coating for each coat applied	CD + 20 days				
43.	Cathodic Protection Bracket Location Drawing	CD + 20 days				
44.	Cathodic Protection Construction Details	CD + 20 days				
45.	Cathodic Protection Warranty	CD + 20 days				
46.	Steel Grit Total Lead Tests	CD + 20 days				
47.	Certification that the interior coating has cured such that it is ready for immersion service	prior to filling tank				

Status Abbreviations ** NEN = No Exceptions Noted, MCN = Make Corrections Noted, R&R = Revise & Resubmit, REJ = Rejected, See Comments,
NAR = No Action Required by Engineer or Owner
CD = Contract Date --- All Submittals Shall be Received Prior to Contractor Starting Work

Submittal Cover Sheet

Copeland Park Tank

(Name of Contractor)

Newport News Waterworks
437 Waterworks Way
Newport News, Virginia 23608

(Address)

(City, State Zip)

Tank Industry Consultants
7740 West New York Street
Indianapolis, Indiana 46214

5 Sets of Each Submittal Included
1 set of reviewed submittals returned to CONTRACTOR
1 set of reviewed submittals forwarded to OWNER

TIC Project No.: 08.163.E204.13

Submittal
No. Date

--	--

SUBMITTAL

Checklist Item No.	Specification Section	Description

**Review is for General Compliance with Contract Documents and Specifications.
No Responsibility is Assumed for Correctness of Dimensions or Details.**

- _____ **No Exceptions Noted**
- _____ **No Action Required by Engineer or Owner**
- _____ **Make Corrections Noted**
- _____ **Revise & Resubmit**
- _____ **Rejected – See Comments**

Tank Industry Consultants

By: _____ Date: _____

SCS