

CITY OF GRAND HAVEN
GRAND HAVEN, MICHIGAN

DEPARTMENT OF PUBLIC WORKS
WATER TREATMENT

November 30, 2020

REQUEST FOR PROPOSALS FOR PROCESS PIPE AND EQUIPMENT
PAINTING FOR THE NORTHWEST OTTAWA WATER TREATMENT PLANT
LOW SERVICE PUMPING STATION

The City of Grand Haven shall accept bids for professional services to prepare and paint process pipe and equipment at the Northwest Ottawa Water Treatment Plant's low service pumping station at the Grand Haven State Park.

There is a required pre-bid Zoom meeting scheduled for December 9th, 2020 at 10 a.m.. Please call either Eric Law or Joe VanderStel for the link at 616-847-3487.

During this meeting we will review the scope of services and communicate the on-site meeting with the bidders at the lake pumping station, for 1001 S. Harbor Drive, Grand Haven, Michigan, which is the Grand Haven State Park. Due to the Covid-19 pandemic, we will only meet on-site with one contractor at a time. Please email or call Mr. Eric Law, Water Plant Supervisor at elaw@grandhaven.org or 616-847-3487 to schedule the on-site meeting.

Proposals will be accepted until 10:00 a.m. on Wednesday, January 13th, 2021 at the office of the City Clerk, 519 Washington Avenue, Grand Haven, Michigan, at which time they will be publicly opened and read.

Information regarding this service can be obtained at the office of the Water Facilities Manager, 30 Sherman Avenue, Grand Haven, or by calling 616-847-3487, or online from the City's Web site: www.grandhaven.org.

The City Council of the City of Grand Haven reserves the right to reject any or all proposals and/or waive any defect in proposals, and to accept any proposal which it shall deem to be in the best interest of the City.

Joseph A. VanderStel,
Water Facilities Manager

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INSTRUCTIONS TO BIDDERS

All proposals are to be submitted on the attached Proposal Form. Envelopes shall be sealed and plainly marked “**NOWS Pumping Station Painting**” on the outside and delivered to the City Clerk’s Office, City Hall, 519 Washington Avenue, Grand Haven, Michigan, 49417. Only sealed bids made out upon the regular proposal forms attached hereto will be considered. All work shall be in accordance with the Water Department and the Department of Public Works.

BACKGROUND

The Northwest Ottawa Water Treatment Plant which provides water to the Northwest Ottawa Water System (NOWS) receives water through a pump station at the shores of Lake Michigan. This pump station was built in 1990, with expansion and upgrades in 2001 and 2012. Most of the paint applications on the process pipe system is now over 30 years old and require new coatings. This will involve surface preparation, environment control and the reapplication of approved gloss zinc/aliphatic acrylic polyurethane coatings. Included in this proposal will be the repair to our concrete saddles. These cast in place concrete pipe supports have either cracked or completely detached and need repair. Coordination, communication with water plant staff, the engineer, and following the required specifications will be critical in receiving this project.

SCOPE OF SERVICES

The Scope of Services, which the contractor will be expected to perform, is outlined below, which includes painting and concrete improvement specifications and documents provided by the Engineer:

1. **Pre-bid Meetings:** The bidder is **required** to meet with water plant staff and the engineer on-site **at the pumping station** to assess preparation, concrete and painting locations and the materials for this project prior to submitting a proposal. To be able to provide this, staff and engineer would like to review the scope of services and communicate the on-site visit through a required Zoom meeting. **The date of the pre-bid Zoom meeting will be December 9, 2020 at 10:00 a.m.** Please email or call Mr. Eric Law, Water Plant Supervisor – elaw@grandhaven.org, or 616-847-3487 after the required Zoom Meeting to schedule an on-site meeting for this project.
2. **Pre-Construction Meeting:** The successful bidder shall meet with the Water Plant staff and Engineer to again review the specifications and to layout a work plan, project approach and

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scheduled dates. All work shall be in compliance with AWWA and NEMA standards.

3. **See attached engineers bid specifications 09 91 00 – pages 9 - 20.**
Including cast in place concrete saddle bid specifications 03 30 03 – pages 21-24
4. The successful bidder shall supply all labor, machine work, parts, materials, tools, equipment, and transportation.
5. All materials and labor shall be warranted for a period of one year from startup.

Any questions may be directed to Eric Law, Water Plant Supervisor, at 616-847-3487, Joe VanderStel, Water Facilities Manager at 616-847-3488 or Brian Phillips, FTC&H at 616-464-3807.

PROFESSIONAL QUALIFICATIONS AND SELECTION CRITERIA

Proposals will be reviewed based on the following criteria and those found in the specifications:

- Experience and demonstrated successful results on similar projects and references from former clients.
- Qualifications of personnel assigned to work on the project.
- Ability to meet work schedule.
- Completeness of work plans and project approach.
- Preference will be given to contractors who are close in proximity and do work in house.
- Project cost. Although cost is not the sole determining factor for selection of a painting contractor, it is an important factor in the evaluation.

REQUESTED INFORMATION TO BE INCLUDED

Those contractors submitting a proposal should include the following information:

1. Contractor's statement of professional qualifications.
2. Statement of Understanding, indicating your approach to this project. Submit this with the bid sheet.
3. Verification of the contractors minimum 10 years' experience with painting projects similar to this project.
4. Provide references and a list that confirms work performed on equipment and process pipe painting that have been completed in the past 5 years.
5. Project manager or crew leader to be assigned. Provide project manager's/crew leader's resume.
6. Resume of qualified staff or sub-contractors for the project.
7. Describe contractor's specific experience with pipe preparation and paint coatings applied higher humidity environments. Discuss any other special considerations for preparation and coatings that may be determined in field.
8. Indication of bidder's ability to complete the work in the time constraints outlined.

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9. Description of required information, materials or services, which the proponent would expect the City of Grand Haven to supply or perform.
10. Expenses and fees to be charged in performing all work elements described under "Scope of Services". All reimbursable costs and expenses not specifically provided for in the cost estimate shall be specifically stated. Anything not stated will be considered incidental.

TIME OF PROJECT PERFORMANCE

Contractor must state in the proposal the anticipated start date. Proposals must be submitted by **January 13, 2021, at 10:00 a.m.** local time, at which time the bids will be opened. Contractor may start after City Council approves the bid (February 1, 2021), signs the standard City of Grand Haven Contractor Services Agreement, and confirms that all insurance documents have been received. Completion deadline for this project is as soon as possible, but no later than **April 9, 2021.**

INSTRUCTIONS TO BIDDERS

1. **SPECIAL CONDITIONS:** Special conditions included in the Bid Document shall take precedence over any provisions stipulated hereunder.
2. **APPLICABLE LAWS:** The revised code of the state of Michigan, Charter of the City of Grand Haven, and all city ordinances insofar as they apply to the laws of competitive bidding, contracts, and the purchases, are made a part hereof.
3. **WORKMEN'S COMPENSATION:** Insofar as Workmen's Compensation is concerned, the bidder of contractor agrees to furnish upon request, certified copies of policies and adequate certificates pertaining thereto as evidence that bidder carries Workmen's Compensation Insurance.
4. **INFRINGEMENTS AND INDEMNIFICATIONS:** The bidder, if awarded an order or contract, agrees to protect, defend, and save the City harmless against any demand for payment for the use of any patented material, process article, or device that may enter into the manufacture, construction, or form as part of the work covered by either order or contract and he/she further agrees to indemnify and save the City harmless from suits or actions of every nature and description brought against it, for or on account of any injuries or damages sustained by a party or parties, by or from any of the acts of the contractor, his/her servants, or agents. To this extent the bidder or contractor agrees to furnish adequate Public Liability and Property Damage Insurance, the amounts of which will be determined by the City whenever such insurance is deemed necessary, when so required the types and amounts of insurance to be provided will be set forth in the Bid Document.
5. **DEFAULT PROVISIONS:** In case of default by the bidder or contractor, the City of Grand Haven may procure the articles of services from other sources and hold the bidder or contractor responsible for any excess costs occasioned thereby. In case of an error by the bidder in making up a proposal, the City Manager may reject such a proposal upon

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presentation of a petition accompanied by a sworn affidavit of error which sets forth the error, the cause thereof and sufficient evidence to substantiate the claim.

6. **PRICING:** Prices should be stated in units of quantity specified in the Bid Document. In case of discrepancy in computing the amount of the bid the unit prices quoted will govern.
7. **QUANTITIES:** When approximate quantities are stated, the City reserves the right to increase or decrease the quantity as best fits its needs.
8. **DELIVERY:** Quotations should include all charges for delivery, packing, crating, containers, etc. Unless otherwise stated, the bidder prices quoted will be considered as being based on delivery to the destination designated in the Bid Document and to include all delivery and packing charges.
9. **INTENT:** It is the intent of this specification to provide for the preparation and painting of the process pipe for the Northwest Ottawa Water Treatment Plant/City of Grand Haven. This specification is not to be interpreted as restrictive, but rather as a measure of the safety, quality and performance against which all similar painting projects will be compared.

In comparing proposals, consideration will not be confined to price only. The successful bidder will be one whose product is judged to best serve the interests of the Northwest Ottawa Water Treatment Plant/City of Grand Haven when standardization, price, product, safety, quality and delivery are considered. The City of Grand Haven reserves the right to reject any or all bids or any part thereof, and to waive any minor technicalities. A contract will be awarded to the bidder submitting the lowest responsible bid, meeting the requirements of this specification.

10. **SPECIFICATIONS:** Unless otherwise stated by the bidder, the proposal will be considered as being in strict accordance with the specifications outlined in the Bid Document.

References to a particular trade name, manufacturer's catalog, or model number are made for descriptive purposes to guide the bidder in interpreting the requirements of the City. They should not be construed as excluding proposals on other types of materials, equipment and supplies. However, the bidder, if awarded a contract, will be required to furnish the particular item referred to in the specifications or description unless a departure or substitution is clearly noted and described in the proposal.

11. **TAXES:** Contractor shall include and be deemed to have included in his/her bid and contract price Michigan State Sales and Use Taxes currently imposed by Legislative enactment and as administered by the Michigan Department Treasury Revenue Division, on the bid date. If the Contractor is not required to pay or bear the burden, or obtains a refund or drawback in whole or in part of any Michigan Sales or Use Tax, interest or penalty thereon, which was required to be and was deemed to have been included in the bid and contract price, the contract price shall be reduced by the amount thereof and the amount of such reduction,

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whether as a refund or otherwise, shall endure solely to the benefit of the City of Grand Haven.

12. **SAMPLES:** Samples, when requested, shall be filed prior to the opening of bids and must be furnished free of expense to the City and if not destroyed, will upon request be returned at the bidder's expense.
13. **BID INFORMALITIES AND REJECTION:** The City reserves the right to waive any nonconformity, irregularity or informalities in any bid, to negotiate with the selected bidder and to award the bid in its determination of its best interest.
14. **AWARD:** All proposals received shall be reviewed by the City Manager, Director of Public Works and Water Facilities Manager. Unless otherwise specified in the Bid Document, the City reserves the right to accept or reject any item in the bid. Unless otherwise stated in the Bid Document, bidders may submit proposals on any item or group of items, provided however that the unit prices are shown as requested. As soon as the Award is made, an order or contract document will be sent to the successful bidder for execution and bond if necessary. If the contracts are not executed and returned to the Purchasing Agent within 10 days of the date of sending, the Bid Surety, if required, will be declared forfeited as liquidated damages. The contract, if awarded, will be awarded to the proponent making the lowest bid, but only after and based upon City's evaluation indicating that such contract award will be in the best interest of the City. The final decision regarding each proposal will be made solely by the City Council.
15. **PAYMENTS:** Partial payments may be made upon presentation of a properly executed claim voucher, unless otherwise stated in the Bid Document. The final payment will be made by the City when the materials, supplies or equipment have been fully delivered and accepted or the work completed to the full satisfaction of the City.
 - a) A 10% retainer shall be held by the City pending satisfactory completion of the scope and/or expiration of the warranty period.
 - b) Increases in contract costs shall be approved in writing, prior to excess expense being incurred. Approval of increases may require formal action by City Council.
16. **BIDDER'S SIGNATURE:** Each proposal and bid surety form must be signed by the bidder with his/her usual signature. All signatures should be in full.

Bids by partnership must be signed by one or more of the partners in the following manner: "John Jones and James Smith, D.B.A., Smith-Jones Company, by John Jones, a partner".

Bids by corporations must be signed with the names of the corporation, followed by the signature and designation of the president, vice-president, or person authorized to bind it in the matter.

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17. **SUBMISSION AND RECEIPT OF BIDS:** Inquiries involving an expenditure exceeding the limits established in the City Charter usually require advertising over a period of at least 5 days prior to scheduled bid opening. Proposals of this nature are publicly read at 10 o'clock AM (unless otherwise noted) on the date bids are scheduled to be received.
- a) Proposals, to receive consideration, must be received prior to the specified time of opening and reading, as designated in the invitation.
 - b) **Bidder must use the bid document proposal forms furnished by the City as none other may be accepted.**
 - c) Proposal forms must be returned intact.
 - d) Removal of any part thereof may invalidate the bid.
 - e) Specifications and plans referred to in this bid document by reference only, need not be returned with the bid, however, no excision of material physically incorporated in the bid document will be permitted.
 - f) Bids are to be submitted in sealed envelopes and identified as requested in the specifications.
 - g) Separate proposals must be submitted on each reference number and proposals shall be typewritten or written in ink.
 - h) Proposals having any erasures or corrections thereon may be rejected unless explained or noted over the signature of the bidder.
18. **INTERPRETATION OF BID AND/OR CONTRACT DOCUMENTS:** A standard City of Grand Haven Contractor Services Agreement shall be completed and signed by the contractor. No oral interpretation will be made to any bidder as to the meaning of the bid and/or Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to the City of Grand Haven. Any inquiry received within a reasonable time prior to the date fixed for the opening of bids will be given consideration. Every interpretation made to a bidder will be on file in the Clerk's office of the City of Grand Haven. In addition, copies will be mailed to each person holding Bid and/or Contract Documents, and all bidders shall be bound by such interpretations whether or not received by the bidders.
19. **CHANGES AND ADDENDA TO BID DOCUMENTS:** Each change or addenda issued in relation to this bid document will be on file in the Clerk's Office of the City of Grand Haven. In addition, to the extent possible, copies will be mailed to each person registered as having received a set of the bid documents.

It shall be the bidder's responsibility to make inquiry as to the changes or addenda issued. All such changes or addenda shall become part of the contract and all bidders shall be bound by such changes or addenda. Information on all changes or addenda issued will be available at the office of the City Purchasing Agent.

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20. **PERFORMANCE SURETY:** The successful bidder is required to furnish a bond or certified check on a solvent bank, payable to the Treasurer of the City of Grand Haven in the amount stated in the Proposal Form as a guarantee for the faithful performance of the contract. The City will determine the sufficiency of the surety.

21. **INSURANCE REQUIREMENTS:** The Contractor will secure and maintain insurance during the term of the contract from an insurance company authorized to do business in the State of Michigan that will protect contractors and subcontractors and the City from all liability (public liability, personal injury and property damage) claims which may arise from operations under the contract. The Contractor may not start work until evidence of all required insurance has been submitted and approved by the City. The contractor must cease work if any of the required insurance is canceled or expires. Three (3) copies of Certificates of Insurance shall be submitted to be approved by the City prior to the execution of the contract. The Certificate shall specifically name the City as an additional insured party. The certificates must contain the agreement of the insurance company notifying the City in writing ten (10) days prior to any cancellation or material alteration of the policy. The Contractor shall not allow any work under the contract to be performed by a subcontractor unless evidence of similar insurance covering the activities of the subcontractor is submitted to and approved by the City. The limits of insurance shall not be less than the following:

A. Workers Compensation Insurance in the amount required by Michigan Law.

B. General Liability:

Bodily Injury and Property Damage combined	
Each Occurrence	\$1,000,000.00
Aggregate	\$1,000,000.00
Personal Injury	\$1,000,000.00

C. Automobile Insurance for Vehicles

Bodily Injury Each Person	\$1,000,000.00
Bodily Injury Each Accident	\$1,000,000.00
Property Damage Each Accident	\$1,000,000.00

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SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the furnishing and application of paints and labeling products:
1. Surfaces to be painted or finished include the following:
 - a. Exposed process piping and equipment in the Low Service Pumping Station, including but not necessarily limited to:
 - 1) Raw Water Piping System.
 - 2) Air/Vacuum and Surge Relief Piping System.
 - 3) Raw Water Pump Cans.
 - 4) Raw Water Pumps and Associated Motors.
 - 5) Ladders and Handrail.
 - 6) Cast Iron Trench Drain Covers.
 - b. Branch runs, couplings, fittings, hardware, and appurtenances on the listed piping systems.
 - c. Pipe supports including but not limited to posts, structural steel supports, straps, hangers, hardware and base plates.
 - d. Existing painted machinery, equipment, and field painted in-line instrumentation.
 - e. All other formerly painted surfaces not specifically excluded in the following paragraph. A completely finished project is required, regardless of whether every individual item is specified herein or indicated on the Drawings to be painted.
 2. Surfaces not to be painted or finished include the following unless otherwise indicated on the Drawings:
 - a. Interior, below grade walls and ceilings.
 - b. Glass.
 - c. Manufacturer's name and identification plates.
 - d. Concealed ducts, pipes and conduits.
 - e. Galvanized, aluminum and fiberglass grating.
 - f. Prefinished electrical and control panels with factory applied final finish.
 - g. Aluminum (unless specifically indicated to be painted).
 - h. Door and window hardware.
 - i. Stainless steel (unless specifically indicated to be painted).
 - j. Wall, ceiling and floor coverings.
 - k. Items with factory applied final finish, such as cabinets, anodized door and window frames, and the like, but excluding machinery, equipment and piping.
 - l. Brick.
 - m. Structural glazed facing tile.
 - n. PVC insulation jackets for pipe.

1.2 REFERENCES

- A. Except as herein specified or as indicated on Drawings, the work of this Section shall comply with the pertinent provisions of the following:
1. ASME/ANSI: A13.1 - Scheme for the Identification of Piping Systems.
 2. ASTM:
 - a. A780 - Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 - b. D16 - Terminology for Paint, Related Coatings, Materials, and Applications.
 - c. D520 - Zinc Dust Pigment.
 - d. D523 - Test Method for Specular Gloss.
 - e. D7234-05 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
 - f. F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride.
 3. Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers:

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- a. Ten States Standards 2012 Edition - Recommended Standards for Water Works.
- b. Ten States Standards 54.5 - Recommended Standards for Wastewater Facilities.
4. Michigan Administrative Code: R 325.51992 Part 603 - Lead Exposure in Construction.
5. National Association of Pipe Fabricators (NAPF):
 - a. NAPF 500-03-01 - Solvent Cleaning for Ductile Iron.
 - b. NAPF 500-03-02 - Hand Tool Cleaning for Ductile Iron.
 - c. NAPF 500-03-03 - Power Tool Cleaning for Ductile Iron.
 - d. NAPF 500-03-04 - Abrasive Blast Cleaning for Ductile Iron Pipe.
 - e. NAPF 500-03-05 - Abrasive Blast Cleaning for Cast Ductile Iron Fittings.
6. Steel Structures Painting Council (SSPC):
 - a. AB-1 - Mineral and Slag Abrasives.
 - b. PA-1 - Shop, Field, and Maintenance Painting of Steel.
 - c. PA-3 - A Guide to Safety in Paint Application.
 - d. SP-1 - Solvent Cleaning.
 - e. SP-2 - Hand Tool Cleaning (SSI-St2).
 - f. SP-3 - Power Tool Cleaning (SSI-St3).
 - g. SP-5 - White Metal Blasting (SSI-Sa3) (NACE #1).
 - h. SP-6 - Commercial Blast Cleaning (SSI-Sa2) (NACE #3).
 - i. SP-7 - Brush-off Blast (SSI-Sa1) (NACE #4).
 - j. SP-8 - Pickling.
 - k. SP-10 - Near-White Blast Cleaning (SSI-Sa2-1/2) (NACE #2).
 - l. SP-11 - Power Tool Cleaning to Bare Metal.
 - m. VIS-1 - Visual Standard for Abrasive Blast Cleaned Steel.
7. United States Department of Labor, Occupational Safety and Health Administration (OSHA): 29 CFR 1926.62.

1.3 DEFINITIONS

A. Terms:

1. Coating: Paint, stain, sealer, or other product specified.
2. Environment:
 - a. Severe: Highly corrosive industrial atmospheres with sustained exposure to high humidity and condensation, frequent cleaning using strong chemicals, heavy concentrations of strong chemical fumes, and frequent splashing and spilling of harsh chemical products.
 - b. Moderate: Corrosive industrial atmospheres with intermittent exposure to high humidity and condensation, occasional mold and mildew development, regular cleaning with strong chemicals, and occasional splashing and spilling of chemical products.
 - c. Mild: Industrial atmospheres with normal exposure to moderate humidity and condensation, occasional mold and mildew development, infrequent cleaning with strong chemicals, low levels of mild chemical fumes, occasional splashing and spilling of chemical products, and normal outdoor weathering.
3. Exposure:
 - a. Environmental conditions to which different surfaces may be exposed as follows:
 - 1) Concealed: Surfaces within the confines of a building or other enclosure not constantly exposed to weather, trapped moisture, high heat or other deteriorating conditions, and normally concealed from view.
 - 2) Immersed:
 - a) Surfaces below a liquid surface or exposed to spray.
 - b) Surfaces exposed to spray include areas to 8 inches above maximum liquid surface in quiescent structures and to 18 inches above maximum liquid surface in mixed or agitated structures.
 - c) Immersed surfaces also include the interior surfaces of the floors, walls, and tops of fully or partially enclosed liquid containing structures, regardless of the liquid level.
 - 3) Interior: Surfaces within the confines of a building or other enclosure not immersed or constantly exposed to weather, trapped moisture, high heat or other deteriorating conditions, and exposed to view.
 - 4) Exterior:

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- a) Above Grade: Surfaces above finished grade and not included in 1), 2), or 3) above.
 - b) Below Grade: Surfaces below finished grade and not included in 1), 2), or 3) above.
4. Gloss Range (as determined by ASTM D523):
- a. High Gloss: A high sheen finish of more than 70 when measured at a 60 degree meter.
 - b. Semi Gloss: A medium sheen finish of 35 - 70 when measured at a 60 degree meter.
 - c. Satin: A low-to-medium sheen finish of 15 - 35 when measured at a 60 degree meter.
 - d. Eggshell: A low sheen finish of 20 - 35 when measured at a 60 degree meter.
 - e. Flat: A lusterless or matte finish of less than 5 when measured at an 60 degree meter.

1.4 SUBMITTALS

- A. Manufacturer's Literature: Specification data sheets and color charts for materials proposed for use on the Work.
- B. Schedules:
 - 1. Submit a finish schedule indicating structures to be coated, items or areas to be coated, the proposed coating system, including surface preparation, primer, intermediate/finish coats, application methods, and color charts.
 - 2. Schedule shall be submitted as a complete package, and work within the constraints specified.
 - 3. No coatings may be applied until The Engineer has made a complete review of the entire submittal.
 - 4. Provide maintenance manuals detailing the proper procedures and materials to be used for maintenance and repainting of the various coatings.
- C. Manufacturer's Certificates: Submit signed affidavit from coatings Manufacturer that submitted coatings are of same or better quality than those specified, and Manufacturer's approval of applicator.
- D. Applicator's Experience: Submit written verification of experience required under Paragraph 1.6 B.

1.5 QUALITY ASSURANCE

- A. General:
 - 1. Acceptability of materials and performance shall be determined by The Engineer.
 - 2. Testing or certifications may be required to aid The Engineer's determination.
 - 3. Expense of testing and certifications when required and, unless noted otherwise in the Contract Documents, shall be borne by Contractor.
 - 4. If destructive testing is required, Contractor shall repair damaged area. Expense of repair shall be borne by Contractor.
 - 5. If initial testing results are unsatisfactory or yield failing results, additional testing will be required. Cost of additional testing shall be borne by Contractor.
 - 6. Coating Reviews:
 - a. Request, in writing, a review of each coat by The Engineer of first finished surface of each type for color, texture and workmanship.
 - b. First accepted surface of each type and color shall be visibly labeled by The Engineer with removable label as Project standard for that type and color of item.
 - c. Labels shall remain in place until painting is finished and accepted.
 - d. For spray application, paint a surface of 100 square feet as a Project standard.
 - 7. Work will be inspected as to proper surface preparation, pretreatment, priming, dry film thickness, curing, color, and workmanship.
 - 8. Applicable standards, test methods, and inspection equipment includes, but is not necessarily limited to the following:
 - a. SSPC-VIS-1 photographic blast cleaning standards (latest revision).
 - b. Inspector's wet film and dry film thickness gages.
 - c. Zorelco 369/PHD pin hole detector.
 - d. Mark II Tooke Gage.
- B. Experience:
 - 1. Applicators shall have a minimum 10 years experience with the coating systems specified.

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2. Experience shall be substantiated by previous project experience, certifications, seminar attendance, Manufacturer validation, or similar means.
 3. Proof of experience will be submitted at the time bids are received.
- C. Pre-Construction Meeting:
1. Convene a pre-construction meeting before the start of Work and prior to ordering materials.
 2. Require attendance of parties directly affecting work of this Section, including The Engineer, Applicator and Coating Manufacturer's Technical Representative.
 3. Review the following as a minimum:
 - a. Access and safety requirements.
 - b. Heating, ventilation and humidity control measures to be utilized.
 - c. How application information will be monitored and recorded, including responsible personnel, monitoring equipment, forms, timely reporting of information recorded, etc.
 - d. Protection of surfaces not scheduled to be coated.
 - e. Schedule of Work.
 - f. Surface preparation.
 - g. Coating application.
 - h. Daily log.
 - i. Repair.
 - j. Applicator's field quality control.
 - k. Cleaning procedures.
 - l. Testing.
 - m. Protection of coating systems.
 - n. Coordination with Owner's activities.
- D. Manufacturer's Services:
1. Arrange for Manufacturer's Technical Representative to provide the services indicated below.
 2. Field visits by the Manufacturer's Technical Representative:
 - a. The Pre-Application Meeting.
 - b. A visit to observe surface preparation and review application techniques of all components of the system.
 - c. A visit to review the completed installation.
 - d. Generally provide assurance and guidance for the entire coating system installation.
 3. Written documentation required from the Coating System Manufacturer:
 - a. A letter of acknowledgement that the coating system materials are specified to be used in a location and for a purpose that meets with the approval of the Coating System Manufacturer and the intent of the Contract Documents. The signed letter shall certify that the Manufacturer's Technical Representative:
 - 1) Is familiar with the project, has attended meetings and is aware of the job conditions and aware of associated products (i.e. filler resurfacers, primers, coatings and other products proposed for the Project).
 - 2) Agrees with the intended application of their products as specified.
 - 3) Agrees with the surface preparation specified, as completed.
 - 4) Agrees with the project specifications. If necessary, submit revisions to project specifications.
 - 5) Agrees that their products are compatible with associated products (i.e. concrete repair materials, existing coating systems, and other products proposed for the Project).
 - 6) Agrees with the type and quantity of testing to be performed, to ensure their product is adequately installed.
 4. Installation contractor's Supervising Site Representative:
 - a. On site during all work being performed.
 - b. Knowledge of all aspects of the Work.
 - c. Review each day's agenda with crew, Contractor's and Engineer's Site representatives.
 - d. If any portion of the Work becomes unclear as to the most appropriate direction, all Work shall stop until a consensus is reached by all parties, including the Engineer's representative and the Manufacturer's Technical Representative, as required.

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- E. Applicator's Project Record: Applicator shall maintain a record for each day work is performed, and shall include a record of all application process information. At a minimum, applicator's record shall include:
1. Material Manufacturer's batch numbers.
 2. Thinning, if used, shall include product used and quantity.
 3. Surfaces material is applied to.
 4. Time of application.
 5. Ambient temperature.
 6. Substrate temperature.
 7. Substrate moisture.
 8. Relative humidity.
 9. Dew point temperature.
 10. Use of heating, dehumidification and ventilation equipment.
 11. Approval of surface preparation prior to proceeding with additional work.
 12. Approval of filler resurfacing, if applicable.
 13. Approval of primer.
 14. Approval of DFT tests.
 15. Unusual or important conditions, features, or events that occur before, during or after work is performed that day. Such information shall be referred to on previous or subsequent daily reports, when appropriate.
 16. Deficiencies or corrections as detailed in Part 3.1.
 17. Applicators record shall be submitted to Engineer at the end of each work week. If quality control concerns arise during the project, the Engineer can require the applicators records shall be submitted to Engineer at the end of each work day.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original sealed containers of the Manufacturer with labels legible and intact. Include the following on labels on each container:
1. Manufacturer's name.
 2. Type of coating.
 3. Manufacturer's stock number.
 4. Manufacturer's batch identification.
 5. Color name and number.
 6. Instructions for mixing and reducing, where applicable.
 7. Percent total solids by volume.
 8. Identification of toxic substances and special instructions.
 9. VOC content.
- B. Storage:
1. Store materials in tightly covered containers at a minimum ambient temperature of 45 degrees F.
 2. Store materials in a well ventilated area and in such a manner as to comply with all safety requirements including applicable federal, state, and local rules and requirements.
 3. Storage shall also be in accordance with instructions of the paint Manufacturer and requirements of insurance underwriters.
 4. Maintain storage containers in a clean condition, free from foreign materials and residue:
 - a. Protect from freezing.
 - b. Keep storage area neat and orderly.
 - c. Remove oily rags and waste daily and dispose of legally.
- C. Handle volatile products carefully and use caution so as not to puncture containers. Keep open flame away from areas while handling containers and be aware of material flash points.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Solvent-Thinned Paints:
 - a. Apply only when temperature of surface to be painted and surrounding air are between 50 and 110 degrees F.

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- b. Maintain temperature range throughout the minimum cure time recommended by the Manufacturer.
 - 2. Inclement Weather:
 - a. Do not apply paint:
 - 1) When relative humidity exceeds 85%.
 - 2) When steel temperature is less than 5 degrees F above the dew point.
 - 3) To damp or wet surfaces.
 - b. Painting may continue if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the Manufacturer during application and drying periods.
 - B. Existing Painted Surfaces:
 - 1. When painting is specified over existing painted surfaces and existing coating types are not known, analyze samples of existing coatings by a laboratory approved by Engineer to determine generic type of coating present and the presence of lead.
 - 2. Submit written report from the lab to Engineer before coating is applied.
 - 3. Required modifications to painting schedule caused by existing paint shall not be justification for extra payment.
 - 4. For each type of surface where a portion of the existing coatings will remain, prepare a 100 square foot mock-up in accordance with the paint manufactures recommendations. Processional shall review mockup prior to commencing with associated work.
 - 5. Existing Coat Bonding Failure:
 - a. Remove existing failed coatings by using a combination of abrasive blasting, power tool cleaning and hand tool cleaning to obtain a surface cleanliness and profile required for the coating specified without damaging the substrate to the point of affecting its appearance.
 - b. Paint as new surface.
 - c. Unforeseen failure conditions may be justification for extra payment.
 - C. Epoxy Coatings:
 - 1. Do not expose epoxies during application and cure to sunlight and heaters that emit carbon dioxide and carbon monoxide.
 - 2. Use caution when applying and curing epoxy coatings to ensure that surrounding areas are not occupied and that adequate ventilation and fresh air are present.
 - D. Contractor shall demonstrate acceptability of environmental conditions as required by Engineer.
- 1.8 EXTRA MATERIALS
- A. Leave with Owner at least 1 gallon of each type and color of paint used for finish coats and one gallon of each type of thinner required.
 - B. Containers shall be tightly sealed and clearly labeled.
- 1.9 WARRANTY
- A. Furnish a 1 year warranty from date of Final Completion to repair defects due to workmanship, materials, or both.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Coatings:
 - a. Tnemec Company.
 - b. Carboline.
 - c. ICI/DeVoe.
- B. Single Manufacturer:

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1. Materials selected for coating systems for each type of surface shall be the product of a single Manufacturer.
2. Provide primers and undercoats produced by the same Manufacturer as the finish coats.

C. VOC Compliance:

1. Individual coatings and coating systems shall have VOC levels at or below the EPA recommendations identified in 40 CFR Part 59 and the coating systems listed in the schedule.
2. VOC content shall be tested in accordance with EPA Method 24.

2.2 MATERIALS

A. Material Types:

1. Paint, primer and related materials are included by Manufacturer's product numbers in the painting schedule in this Section.
2. Paint used for repair of galvanizing shall have minimum 95% zinc dust in accordance with ASTM D520.

B. Colors: Colors of finish coats shall be as selected by Engineer.

2.3 MIXES

A. Mixing:

1. Deliver paints to the Site ready-mixed, when this is possible.
2. Mix two-component paints at the Site and observe pot life as recommended by Manufacturer.
3. Proceed with mixing until paint becomes smooth, homogeneous, and free of surface swirls or pigment lumps.
4. When mixing multi-component paints, remix each component individually, then blend the components, as recommended by the Manufacturer, until the mixture is completely uniform in color.

B. Thinning:

1. No thinning will be permitted unless absolutely necessary.
2. Paint shall be spray-applied in as-received condition to demonstrate necessity for thinning.
3. Use only thinners as recommended by paint Manufacturer for specific use.
4. Amount of thinner used shall be reported to Engineer.
5. Measure viscosity to ensure proper thinning ratios have been used.

C. Tinting:

1. Onsite tinting will be permitted only when accepted in writing by Engineer.
2. Use only tinting colors recommended by the Manufacturer for the specific type of coating.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspection:

1. Prior to the commencement of surface preparation or other coating activities, thoroughly inspect the surfaces to determine if the Work is ready to be prepared and painted.
2. Report in writing to Engineer conditions that may potentially affect proper application.
3. Do not commence surface preparation or other coating activities until such defects have been corrected.
4. The Engineer will be conducting periodic inspections of the paint application process. Coordinate with Engineer to obtain inspections as required. Each step of the initial painting application will be inspected. Provide 48 hours notice of when areas will be available for inspection. Further inspections will be conducted when conditions warrant.

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- B. Correction of Defects:
 - 1. Correct defects and deficiencies in surfaces which may adversely affect work of this Section.
 - 2. Start of painting will be construed as the applicator's acceptance of surfaces and conditions within a particular area.

3.2 SURFACE PREPARATION

- A. General:
 - 1. Prepare surfaces in accordance with this Article, the paint Manufacturer's recommendations and as specified in the painting schedule of this Section.
 - 2. Cleanliness of prepared steel:
 - a. Determined by The Engineer using Steel Structures Painting Council Manual SSPC-VIS-1.
 - b. Small steel panels which have been abrasive blast-cleaned and approved for a specific cleanliness may be used for comparative purposes to facilitate inspection and approval.
 - c. Securely wrap these panels in clear plastic, seal to protect them from deterioration and mark with appropriate SSPC-SP6 cleaning specification.
 - 3. Cleanliness of Compressed Air:
 - a. Periodically check compressed air to verify that it is clean, dry and oil-free by directing its flow toward a sheet of clean white paper.
 - b. Place oil and water separators in the air line as close as possible to blast-cleaning equipment.
 - c. Do not use contaminated air for cleaning.
 - 4. Protective Covers:
 - a. Protect motors, bearings, chain drives, and other moving parts by wrapping with plastic and sealing with tape.
 - b. Maintain protective covers in dust tight condition.
 - 5. Correct steel and fabrication defects revealed by surface preparation, such as weld imperfections, delamination, scabs, and slivers, by appropriate trade before proceeding further with surface preparation.
 - 6. Clean Up of Prepared Areas:
 - a. Remove dust and debris from the prepared surfaces by vacuum cleaning.
 - b. Completely clean up residue from surface preparation operations within the entire space to be painted prior to applying coatings.
 - 7. Inspect surfaces after surface preparation is complete and prior to application of coatings.
 - 8. Remove hardware, accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface applied protection prior to surface preparation and painting, and then replace items after paint has dried.
- B. Existing Ferrous Metals:
 - 1. Surface Preparation - Field:
 - a. Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1.
 - b. Remove rust and corrosion using a combination of SSPC-SP2 or SSPC-SP3 as required.
 - c. Power tools used as part of surface preparation shall be equipped with vacuum shrouds which capture all dust and debris. Vacuum exhaust shall pass through HEPA filters before being exhausted to the space.
 - d. Where existing coatings are well adhered and will be top coated, abrade entire surface per paint manufacturers recommendations to ensure optimum bonding.
 - e. Thoroughly clean damages, scratches and abraded areas of the existing finish coatings.
 - f. Feather out edges to make touch-up patches inconspicuous.
 - g. Clean surfaces with solvent.
 - h. Contractor shall meet applicable surface preparation and application specifications.
- C. Nonferrous Metals and Galvanized Steel:
 - 1. Remove dirt, oil, grease, and other foreign matter in accordance with SSPC-SP1. For Solvent Cleaning, test surface with copper sulfate solution. If galvanizing turns black, then surface is clean and ready for paint application. Otherwise abrade surface or brush blast in accordance with SSPC-SP7.
 - 2. Remove rust and corrosion by hand or power tool cleaning, taking care not to damage or remove the galvanizing.
 - 3. Remove rust in accordance with SSPC-SP2 or SSPC-SP3.

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4. On galvanized steel, touch-up exposed metal areas using zinc-rich primer.
 5. Repairs and touch up of galvanized coatings shall comply with ASTM A780. Zinc-rich primers shall be compatible with finish coats.
- D. Equipment: Open doors, hatches, and covers, and remove removable appurtenances and prepare surfaces separately in accordance with this Section.

3.3 APPLICATION

A. General:

1. Take necessary safety precautions in accordance with this Article, SSPC-PA Guide 3, Manufacturer's recommendations, federal, state, and local rules and requirements, and insurance underwriter's guidelines.
2. Apply coatings in accordance with this Article, SSPC-PA1, and the Manufacturer's recommendations.
3. Moisture Content:
 - a. Do not apply initial coating until moisture content of surface is within limitations recommended by paint Manufacturer.
 - b. Determine moisture content by one of the following methods:
 - 1) As specified in Paragraph 3.2 B of this Section.
 - 2) By use of moisture meter approved by Engineer.
4. Mil Thickness:
 - a. Apply coats in a uniform manner and of the minimum dry film thickness as indicated in the painting schedule.
 - b. Maximum mil thickness shall be as recommended by coating Manufacturer.
 - c. Where the mil thickness is omitted, it shall be as recommended by coating Manufacturer.
5. Sand and dust between each coat to remove defects visible from a distance of 5 feet.
6. Additional Coats:
 - a. Apply within recoat recommendation of the Manufacturer based on temperature and humidity variations.
 - b. Schedule inspections so as to not interfere with recoat time.
7. Each coat shall be smooth, free of brush marks, streaks, laps or pile-up of paint, and skipped or missed areas.
8. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.
9. Spray apply coatings on hollow metal units.
10. Finish door tops, edges, and bottoms the same as exposed surfaces.
11. Protect wet paint against damage from dust or other detrimental foreign matter as much as is practicable.
12. Remove grills, covers, and access panels from mechanical and electrical systems and tanks from location and paint separately.
13. Where equipment, piping, conduit or the like are removed from an existing painted surface, patch and paint the newly exposed surface as required so the newly exposed surface matches surrounding surfaces in coating and appearance.
14. Where epoxy coatings are scheduled over existing paint:
 - a. Test existing paint and substrate for lifting or alligating.
 - b. If existing paint lifts or alligators, remove it down to bare substrate.
15. Remove existing adhesive-applied pipe, tank and equipment labels as required and replace with new after painting is complete in accordance with the pipe and equipment identification requirements of this section.

B. Valves, Fittings, and Supports:

1. Paint valves and fittings the same base color as the pipe they adjoin.
2. Paint floor stands the same base color as the pipe they adjoin.
3. Wall Brackets and Pipe Hangers:
 - a. Paint the same base color as the wall or ceiling they adjoin.
 - b. Use gray color if wall or ceiling is not painted.

C. Paint Application Conditions

1. Do not apply paint when:
 - a. Surface temperature is below 50 degrees F or above 110 degrees F.
 - b. Relative humidity exceeds 85% or may exceed 85% within 18 hours.

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- c. Surface is wet.
- d. Surface temperature and relative humidity have reached acceptable levels for applying coatings, those conditions must be conservatively estimated to remain in effect for 6 hours after coating application has stopped.

3.4 PIPE AND EQUIPMENT IDENTIFICATION

- A. General:
 - 1. Identify existing non-buried piping painted as part of this Work in accordance with ASME/ANSI A13.1, this Section, and as required in the Color Schedule.
 - 2. Identify pumps and equipment.
- B. Color Bands:
 - 1. Where color bands are indicated for piping identification, use colored vinyl tape spaced every 6 feet, before and after each valve and where pipe enters and leaves each wall.
 - 2. Band Widths:
 - a. Pipe up to and including 2-inch diameter: 3/4-inch wide.
 - b. Pipe 2-1/2-inch to 6-inch diameter: 2 inches wide.
 - c. Pipe 8-inch to 12-inch diameter: 4 inches wide.
 - d. Pipe 14-inch diameter and over: 6 inches wide.
- C. Signs, Labels, and Arrows:
 - 1. Replace all existing pipe labels and arrows and at intervals consistent with existing labels and ASME/ANSI requirements.
 - 2. Place an arrow adjacent to every pipe label to indicate direction(s) of flow.
 - 3. Use stenciled labels and arrows for pipe identification systems.
 - 4. Labels and Arrow Heights:
 - a. Pipe or Covering Over 3-inch Diameter: 2-1/4 inches.
 - b. Pipe or Covering 1-inch to 3-inch Diameter: 1-1/8 inches.
 - c. Pipe or Covering Under 1-inch Diameter: 1/2-inch.
 - 5. Label pumps and equipment items, including description and tag number, with lettering size coordinated with Engineer depending on equipment size.
 - 6. Stenciled lettering and arrows must be crisp with no bleeding at the edges or overspray.

3.5 TEMPORARY HEATING, VENTILATION AND HUMIDITY CONTROL REQUIREMENTS

- A. General:
 - 1. Ventilation is mandatory.
 - 2. Provide ventilation that exhausts fumes and odors to the exterior at a location where existing HVAC systems will not pick up these fumes and odors.
 - 3. Provide negative air pressure to those spaces receiving coatings without reducing air temperatures in those spaces which may impede the curing process of those coating systems.
 - 4. Ventilation is required during surface preparation, application of coating systems, and the curing period for those systems.
 - 5. Provide additional equipment and fuel as required to condition the space for surface preparation, application of products, and curing of those products, in accordance with Manufacturer's requirements. This equipment may include, but is not limited to, heaters, dehumidifiers and fans for intake and exhaust air.

3.6 ENCLOSURE

- A. Construct a weather-tight enclosure as required around the exterior of the surface to be repaired. The enclosure shall be of such quality as to maintain optimal conditions for the work.
- B. The enclosure shall be capable of isolating all dust, fumes and odors.
- C. The enclosure shall remain until the repair work is sufficiently cured.

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3.7 FIELD QUALITY CONTROL

- A. Inspection:
 - 1. To facilitate painting and inspection, each coat of paint shall be of a different color or tint.
 - 2. Finished metal surfaces shall be free of skips, voids or pinholes in each coat when tested with a low voltage detector.
 - 3. Do not apply additional coats until previous coat has been inspected and acknowledged in writing by Engineer.
 - 4. Only coats of paint acknowledged in writing will be considered in determining number of coats applied.
- B. Final Touch-Up:
 - 1. Surface damage shall be repaired with touch-up paint matching material used for original coating.
 - 2. Repaired areas shall be rubbed out and polished to match surrounding finish.
 - 3. Finish repair shall be of the quality typically found within the auto body industry.

3.8 CLEANING

- A. Remove spilled, splashed, or spattered paint from surfaces.
- B. Do not mar surface finish of item being cleaned.
- C. Perform daily cleaning of the work area. Pick up scrap, debris and waste material. Maintain neat and orderly storage of materials in Owner designated spaces.
- D. Contractor is responsible for properly disposing of all waste products.

3.9 PROTECTION

- A. General:
 - 1. Adequately protect other surfaces from paint and damage.
 - 2. Repair damage as a result of inadequate or unsuitable protection.
- B. Protective Materials: Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.
- C. Fire Hazards: Place cotton waste, cloths, and materials which may constitute a fire hazard in closed metal containers and remove daily from Site.
- D. Electrical Plates and Hardware:
 - 1. Remove electrical plates, surface hardware, fittings and fastenings prior to painting operations.
 - 2. These items are to be carefully stored, cleaned and replaced upon completion of work in each area.
 - 3. Do not use solvent to clean hardware that may remove permanent lacquer finish.
- E. Equipment with Factory-Applied Final Finishes:
 - 1. Certain equipment with factory-applied finishes may be accepted by Engineer at Engineer's discretion.
 - 2. Protect finishes of equipment with approved factory-applied final finishes from scratches and abrasions by all practical means.
 - 3. Repair surface damage with touch-up paint furnished by equipment Manufacturer by workmen skilled in this type of work.
 - 4. Rub out and polish repaired areas to match surrounding finish.
 - 5. Finish repair shall be of the quality typically found within the auto body industry.
 - 6. If damage to item is severe in the judgment of Professional, the equipment will be rejected or a new finish coat shall be applied after proper surface preparation at the discretion of Engineer, at no additional cost to Owner.

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3.10 COATING SCHEDULE

A. All mil thicknesses indicated are dry film thicknesses (DFT).

1. Interior Ferrous Metals – Non-Immersed: Gloss Zinc/Aliphatic Acrylic Polyurethane System:

System Manufacturer	Surface Preparation	First Coat	Second Coat	Third Coat
Tnemec	(Field): Combination of SSPC-SP2 and SSPC-SP3 cleaning	(Field) and (Field Touch-up, Prime): 90-97 Tneme-Zinc 2.5-3.5 Mils	(Field): 161-Tneme-Fascure 4.0-6.0 Mils	(Field): 1074 Endura-Shield II with 44-710 urethane accelator 3.0-5.0 Mils
Carboline	(Field): Combination of SSPC-SP2 and SSPC-SP3 cleaning	(Field) and (Field Touch-up, Prime): Carbozinc 859 2.5-3.5 Mils	(Field): Carboguard 635 4.0-6.0 Mils	(Field): Carbothane 134HB with Additive 101 urethane accelator 3.0-5.0 Mils
ICI/DeVoe	(Field): Combination of SSPC-SP2 and SSPC-SP3 cleaning	(Field) and (Field Touch-up, Prime): CATHCOAT 302 H Reinforced Inorganic Zinc (78%) 2.5-3.5 Mils	(Field): BAR-RUST 235 Epoxy Mastic 4.0-6.0 Mils	(Field): DEVTHANE 379 Aliphatic Urethane Gloss with urethane catalyst 070A0000 3.0-5.0 Mils

2. Interior Non-Ferrous and Galvanized Metals – Non-Immersed: Gloss Zinc/Aliphatic Acrylic Polyurethane System:

System Manufacturer	Surface Preparation	First Coat	Second Coat
Tnemec	(Field): SSPC-SP1 solvent cleaning and SSPC-SP3 or SSPC-SP7 (abrade to create a 1.0 - 1.5 mil profile)	(Field) 161-Tneme-Fascure 4.0-6.0 Mils	(Field): 1074 Endura-Shield II with 44-710 Urethane Accelator 2.0-3.0 Mils
Carboline	(Field): SSPC-SP1 solvent cleaning and SSPC-SP3 or SSPC-SP7 (abrade to create a 1.0 - 1.5 mil profile)	(Field): Carboguard 635 4.0-6.0 Mils	(Field): Carbothane 134HB with Additive 101 urethane accelator 2.0-3.0 Mils
ICI/DeVoe	(Field): SSPC-SP1 solvent cleaning and SSPC-SP3 or SSPC-SP7 (abrade to create a 1.0 - 1.5 mil profile)	(Field): DEVTRAN 201H Epoxy Primer 4.0-6.0 Mils	(Field): DEVTHANE 379 Aliphatic Urethane Gloss with urethane catalyst 070A0000 2.0-3.0 Mils

3.11 COLOR SCHEDULE

A. Piping and Equipment to be painted shall be identified with the Owner's standard color coding system. Submit a schedule with color Samples to Engineer.

END OF SECTION 09 91 00

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SECTION 03 30 03 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the furnishing and installation of formwork, reinforcement and concrete.

1.3 REFERENCES

- A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
 - 1. ASTM Standard Specifications, Test Methods, and Classifications:
 - a. A615 - Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.
 - b. C33 - Specification for Concrete Aggregates.
 - c. C94 - Specification for Ready-Mixed Concrete.
 - d. C150 - Specification for Portland Cement.
 - e. C260 - Specification for Air-Entraining Admixtures for Concrete.
 - f. C309 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - g. C494 - Specification for Chemical Admixtures for Concrete.
 - 2. ACI - American Concrete Institute:
 - a. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
 - b. ACI 301 - Specifications for Structural Concrete for Buildings.
 - c. ACI 304R - Guide for Measuring, Mixing, Transporting and Placing Concrete.
 - d. ACI 305R - Hot Weather Concreting.
 - e. ACI 306R - Cold Weather Concreting.
 - f. ACI 309R - Guide for Consolidation of Concrete.
 - g. ACI - 318 - Building Code Requirements for Reinforced Concrete.
 - h. ACI 347R - Guide to Formwork for Concrete.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Formwork: The design and engineering of formwork, as well as its construction, shall be the responsibility of Contractor.

1.5 SUBMITTALS

- A. Shop Drawings: For reinforcing steel.
- B. Mix Designs:
 - 1. Submit concrete mix design for review prior to placing concrete.
 - 2. Submit regardless of whether Contractor chooses ready mixed concrete or pre-bagged mixes, as specified herein.

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1.6 QUALITY ASSURANCE

- A. Concrete Material Testing:
1. Point of sampling and the method of securing the Samples:
 - a. Determined by testing agency selected by Owner.
 - b. In accordance with ASTM C172.
 2. Concrete Cylinder Testing:
 - a. In accordance with ASTM C31 and C39.
 - b. Concrete cylinder Sample shall consist of a minimum of 4 cylinders.
 - 1) Make standard 6x12 cylinders, except that for concrete mixes with 1-inch or smaller coarse aggregate, 4x8 cylinders may be used.
 - c. Handle cylinders carefully.
 - d. On Site Storage:
 - 1) 12 hours, minimum, 48 hours maximum.
 - 2) At a temperature range of 60 to 80 degrees F and in a moist environment.
 - 3) Shielded from direct sunlight and radiant heat.
 - 4) The Contractor shall construct heated or water bath enclosures, as applicable, if conditions require.
 - e. Laboratory Curing:
 - 1) For duration of curing after on Site storage.
 - f. Test 1 of the cylinders at 7 days and 2 cylinders at 28 days. Save 1 cylinder as a spare.
 - g. Acceptance and evaluation of the concrete shall be based on ACI 301.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Formwork:
1. Form grade plywood or metal panels; no torn edges or worn plywood.
 2. Form release agent non-staining, non-emulsifiable type Magic Kote by Symons; or equal.
 3. Form ties, spreaders and accessories.
 4. Provide chamfered strips in exposed corners of concrete.
- B. Reinforcement:
1. Reinforcing Bars:
 - a. ASTM A615.
 - b. Yield Stress: $F_y = 60,000$ psi, Grade 60.
 2. Accessories resting on surfaces to be left exposed as finished surfaces shall have plastic coated legs.
- C. Concrete Materials:
1. Portland Cement: ASTM C150, Type I.
 2. Fine and Coarse Aggregates: ASTM C33
 3. Water: Clean, fresh and potable.
 4. Air-Entrainment: ASTM C260
 5. Water Reducing Agents: ASTM C494.
 6. No calcium chloride allowed in materials used in concrete mix.
 7. Membrane Curing Compounds: ASTM C309.

2.2 CONCRETE MIXES

- A. Contractor may choose between using ready mixed concrete delivered to the Site, or pre-bagged mixes mixed on Site.
1. Pre-bagged mixes shall meet the performance requirements specified in this section for ready mixed concrete.
- B. Proportioning:

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1. Proportions of materials for concrete shall be in accordance with ACI 211.1.
 - a. Design Compressive Strength: 4,000 psi.
 - b. Minimum Cementitious Content: 5-1/2 sacks.
 - c. Water-Cementitious Ratio: 0.52 maximum.
 - d. Slump Limits: 4 inches \pm 1-inch before addition of water reducer, if any.
 - e. Entrained Air Content: 6% \pm 1%.

2.3 SOURCE QUALITY CONTROL

- A. Production and Delivery:
 1. If ready mixed concrete from a batch plant is provided, it shall be mixed and transported to the Site in accordance with ASTM C94.
 2. Ready-mix delivery tickets shall be furnished with each batch of concrete before unloading at the Site, on which is printed, stamped or written the following information:
 - a. Name of ready-mix batch plant.
 - b. Serial number of ticket.
 - c. Date and truck number.
 - d. Name of Contractor.
 - e. Job name and location.
 - f. Specific class of designation of concrete.
 - g. Amount of concrete (cubic yards).
 - h. Time loaded or of first mixing of cement and aggregates.
 - i. Type, name and amount of admixture.

PART 3 - EXECUTION

3.1 ERECTION AND PLACEMENT

- A. Forms:
 1. Provide required forms, shores, bracing, breast timbers, form ties and accessories in sufficient quantities so as not to delay the work.
 2. Coordinate work with other trades for the installation of embedded items and form penetrations.
 3. Place chamfer strips in the forms at corners and other area to prevent corner spalling.
 4. Form Removal:
 - a. No earlier than 3 days for columns and walls.
- B. Reinforcement:
 1. Steel reinforcement, at the time concrete is placed around it, shall be free from rust scale, loose mill scale, oil, paint and other coatings which will destroy or reduce bond between steel and concrete.
 2. Notify Engineer 24 hours prior to concrete pour for final check of reinforcing placement.
- C. Concrete:
 1. If using pre-bagged mixes, be careful not to add excessive water that will reduce the concrete strength below specified levels.
 2. Handle concrete from mixer to place of final deposit in carts, buggies or conveyors.
 3. Compact concrete by mechanical vibration equipment, but do not transport concrete through forms by vibrating.
 4. As soon as possible after finishing or removing forms, treat surfaces with a liquid membrane-forming curing compound unless specified otherwise.
 5. Protect freshly placed concrete from damage due to extreme temperatures in accordance with ACI 305R and ACI 306R.

END OF SECTION 03 30 03

CITY OF GRAND HAVEN
 GRAND HAVEN, MICHIGAN

DEPARTMENT OF PUBLIC WORKS
 WATER TREATMENT



Hard copy is intended to be 8.5x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

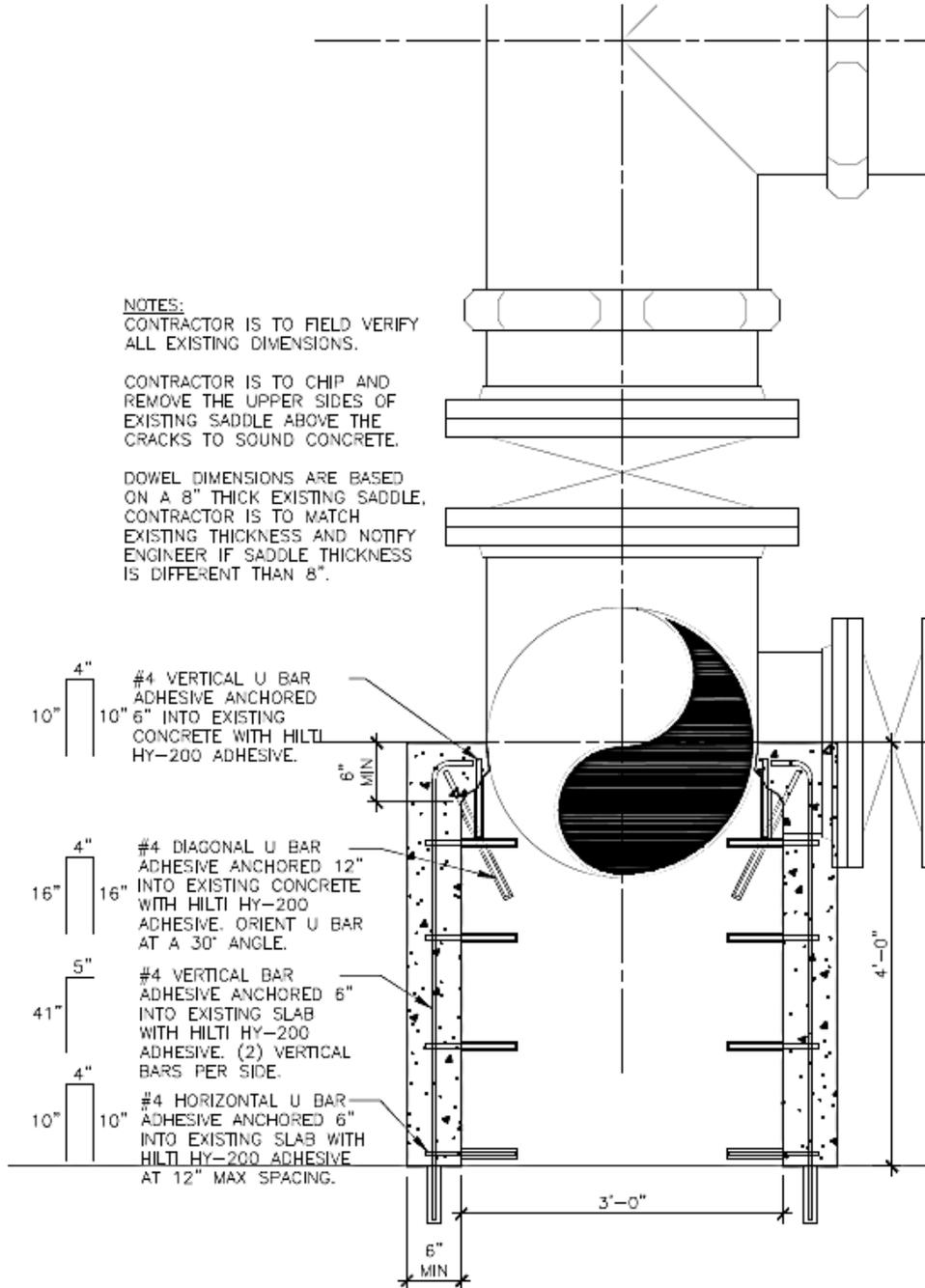
City of Grand Haven
 Ottawa County, Michigan

Low Service Process Pipe and Equipment Painting

NOTES:
 CONTRACTOR IS TO FIELD VERIFY ALL EXISTING DIMENSIONS.

CONTRACTOR IS TO CHIP AND REMOVE THE UPPER SIDES OF EXISTING SADDLE ABOVE THE CRACKS TO SOUND CONCRETE.

DOWEL DIMENSIONS ARE BASED ON A 8" THICK EXISTING SADDLE. CONTRACTOR IS TO MATCH EXISTING THICKNESS AND NOTIFY ENGINEER IF SADDLE THICKNESS IS DIFFERENT THAN 8".



4"
 10"
 10"
 #4 VERTICAL U BAR
 ADHESIVE ANCHORED
 6" INTO EXISTING
 CONCRETE WITH HILTI
 HY-200 ADHESIVE.

4"
 16"
 16"
 #4 DIAGONAL U BAR
 ADHESIVE ANCHORED 12"
 INTO EXISTING CONCRETE
 WITH HILTI HY-200
 ADHESIVE. ORIENT U BAR
 AT A 30° ANGLE.

5"
 41"
 4"
 #4 VERTICAL BAR
 ADHESIVE ANCHORED 6"
 INTO EXISTING SLAB
 WITH HILTI HY-200
 ADHESIVE. (2) VERTICAL
 BARS PER SIDE.

10"
 10"
 #4 HORIZONTAL U BAR
 ADHESIVE ANCHORED 6"
 INTO EXISTING SLAB WITH
 HILTI HY-200 ADHESIVE
 AT 12" MAX SPACING.

**CONCRETE SADDLE
 REPAIR DETAIL**

NO SCALE

PLOT INFO 2:02:03:007 4:00:00:000 PLOTTER:HP8000 DATE: 1/12/2020 TIME: 10:47:30 AM USER: BOPHLLPS

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PROJECT NO.
 PROJECT

FIGURE NO.
1

CITY OF GRAND HAVEN
GRAND HAVEN, MICHIGAN

DEPARTMENT OF PUBLIC WORKS
WATER TREATMENT

REQUEST FOR PROPOSALS FOR PROCESS PIPE AND EQUIPMENT
PAINTING FOR THE NORTHWEST OTTAWA WATER TREATMENT PLANT
LOW SERVICE PUMPING STATION

BID PROPOSAL FORM

Date: _____

Ms. Linda Browand, City Clerk
City of Grand Haven
519 Washington Avenue
Grand Haven, Michigan 49417

Dear Ms. Browand:

Completely in accordance with your notice, instructions and specifications dated November 30, 2020, we propose to supply professional services as described in your Request for Proposals to paint the process pipe equipment and concrete saddle repairs for the Northwest Ottawa Water Treatment Plant's low service pumping station.

**Painting of the Process Piping and Equipment
Including the Concrete Saddle Repairs.**

- 1) Total Net Cost "Not-to-Exceed"
to perform professional services

\$ _____

Contingency: A 15% contingency cost for unforeseen repairs beyond those detailed in the specifications is to be included in the Total Net Cost. *This is only to be used based on the verbal and written recommendation of the contractor, verified by the engineer and agreed by the owner, for repairs and or replacement beyond the listed specifications.*

- 2) Total Contingency
Contingency equals the above painting services x 0.15 \$ _____

CITY OF GRAND HAVEN
GRAND HAVEN, MICHIGAN

DEPARTMENT OF PUBLIC WORKS
WATER TREATMENT

Overall Total Net Cost “Not-to-Exceed” (from above) The Overall Total Net Cost represented here is the sum of the 15% contingency plus the surface preparation and painting of the process piping equipment and concrete repairs Total Net Cost.

TOTAL

\$ _____

This (above) bid total will be used to determine the contractor for professional services

Please attach a brief Statement of Understanding, indicating your approach to this project.

Anticipated Start Date..... _____

Agreed completion Date..... April 9, 2021

Proposer's Name or Business

Street/Mailing Address

City/State/Zip Code

Proposer's Signature

Telephone Number