SECTION 01026
SCHEDULE OF VALUES
TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 Requirements

A. Within thirty (30) days of the Notice to Proceed or at the Pre-Construction Meeting (whichever is sooner), Contractor shall submit a Schedule of Values for Owner's approval. The Schedule of Values is a detailed itemized breakdown of all lump sum bid items. Submit corrected Schedule of Values within ten (10) days of receiving Owner's reviewed Schedule of Values requiring correction.

B. The Schedule of Values shall be used as a basis for determining progress payments on a lump sum contract or any designated lump sum bid item. The Schedule of Values shall be a schedule of cost loaded construction activities equal, in total, to the lump sum bid and shall be in such form and sufficient detail to correctly represent a reasonable apportionment of the lump sum. Prior to submitting a monthly payment request, the Contractor shall have submitted a detailed Schedule of Values and obtained approval from the Owner.

C. Each lump sum bid item on the Bid Schedule(s), as set forth in the Contractor's Bid Proposal must be broken down separately. The breakdown of each lump sum bid item must cover the cost of construction required by the Contract Drawings and Specifications for that item. The sum of the values for the construction activities, within a bid item, must equal the total bid amount for that item. The breakdown shall include subcontract amounts, which shall not deviate from the amounts submitted in the Bid Proposal. The Contractor shall provide certification from the Subcontractors certifying the subcontract amounts.

D. Each activity in the Schedule of Values shall delineate one construction activity. For example, the placement of concrete between construction joints, the construction of an electrical duct bank or pipeline between points A & B. The costing for each activity should include all costs for the labor and materials or equipment required to complete the activity. For example, concrete construction activities should include all costs for the forming, placing of reinforcement, placing concrete, and curing. The cost for pipeline construction activities should include materials, equipment and installation including pipeline supports or thrust blocks. The excavation and backfill for a pipeline or structure may be separate activities. The Bid Proposal breakdown shall include the itemized costs for facility startup and testing to be performed before the final project acceptance is made. No non-construction activity shall be cost loaded.

E. Where Contract Documents require a CPM Construction Schedule, the Contractor shall use cost loaded construction activities from the Construction Schedule as a Schedule of Values. Each construction activity shall be encoded to its bid item and a sort provided for each bid item totaling the cost loaded amount. The total of the Cost Loaded amounts for each bid item shall equal the amount bid for that item.

F. The total of the Schedule of Values shall equal the current Contract value at all times. At any time during the progress of the Contract Work, the Owner reserves the right to review the cost loading of the Schedules of Values and direct necessary revisions. When requested by the Owner, the Contractor shall provide all information necessary to substantiate the cost loading.

1.02 Schedule of Values for Projects with Funding

Where project is partially or fully funded by State or Federal loans or grants, the Schedule of Values shall be designed to provide a summary of costs that is coordinated with the funding agency's forms and requirements for disbursements to Owner. Contractor shall cooperate and coordinate with Owner to modify and revise the Schedule of Values and payment requests to achieve a summary of costs acceptable to Owner and the funding agency.

PART 2 - PRODUCTS

(NONE THIS SECTION)

PART 3 - EXECUTION

3.01 Mobilization

Contractor shall limit amounts included under mobilization to the following items (if required by the Contract Documents):

A. Moving onsite any equipment required for first month operations.
B. Temporary construction power.
C. Fire protection system.
D. Construction water supply.
E. Providing field office trailers.
F. Providing onsite sanitary facilities.
G. Providing potable water facilities as specified.
H. Arranging for and erection of Contractor's work and storage yard.
I. Contractor's bonds and insurance.
J. Subcontractor bonds and insurance.
K. Obtaining all required permits, licenses, and fees.
L. Developing construction schedule and Schedule of Values.

Contractor shall furnish data and documentation to substantiate the amounts claimed under mobilization. Total cost for mobilization shall be limited to no more than 5 percent of the Total Contract Amount.

3.02 Example of Categories Required for Schedule of Values

The following is an example of categories required for the Schedule of Values. It represents the minimum level of detail required to quantify the scope of work. Contractor shall provide any

necessary additional breakdown of any of the items listed below and Owner may also require additional breakdown of any and all items. Contractor shall verify all quantities and items of work prior to submittal.

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
1	Mobilization, Bonds, Insurance, Permits, Construction Schedule, and Schedule of Values		LS		$_____
2	Audio-Video Recording		LS		$_____
3	Equipment Items[1]				
	A. Materials		LS		$_____
	B. Installation		LS		$_____
	C. Testing		LS		$_____
4	Site Work Activities[1]				
	A. Excavation		LS or CY		$_____
	B. Backfill		LS or CY		$_____
	C. Rough Grading		LS or CY		$_____
	D. Fine Grading		LS		$_____
	E. Import/Export		CY		$_____
	F. Dewatering		LS		$_____
	G. Concrete Slabs[2]		CY		$_____
	H. Concrete Footings[2]		CY		$_____
	I. Paving		SF		$_____
	J. Curbs/Curbs and Gutters[2]		LF		$_____
	K. Guard Posts		EA		$_____
	L. Pre-Cast Vaults		LS or EA		$_____
	M. Fencing		LF		$_____
	N. Gates		LS		$_____
	O. Miscellaneous Concrete[2]		CY or LF		$_____

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
5	Piping[1]				
	A. Materials (including Fittings)		LF		$_____
	B. Installation		LF		$_____
	C. Supports		EA		$_____
	D. Valves		EA		$_____
	E. Coatings		LS		$_____
	F. Testing		LS		$_____
6	Cast-in-Place Concrete Structures[1]				
	A. Site Preparation		LS		$_____
	B. Demolition (if necessary)		LS		$_____
	C. Excavation		LS or CY		$_____
	D. Backfill		LS or CY		$_____
	E. Dewatering		LS		$_____
	F. Base Materials		LS or CY		$_____
	G. Pump Can Footings[2]		CY		$_____
	H. Pump Can Walls[2]		CY		$_____
	I. Miscellaneous Concrete[2]		CY		$_____
	J. Finishing		LS		$_____
7	Equipment Building				
	A. Site Preparation		LS		$_____
	B. Excavation		LS or CY		$_____
	C. Backfill		LS or CY		$_____
	D. Concrete Foundation[2]		CY		$_____
	E. Concrete Slab[2]		CY		$_____
	F. Masonry Walls		SF		$_____

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
	G. Structural Steel		LS		$_____
	H. Built Up Roofing		LS		$_____
8	Electrical/Instrumentation/ Lighting[(1)]				
	A. Electrical Service Panel/ Distribution Switchboard		LS		$_____
	B. Automatic Transfer Switches		LS		$_____
	C. Motor Control Centers		LS		$_____
	E. Control Panels		LS or EA		$_____
	F. Lighting Panels		LS or EA		$_____
	G. Equipment Control Panels		LS or EA		$_____
	H. Conduit (Above Grade)		LS or LF		$_____
	I. Conduit (Below Grade)		LS or LF		$_____
	J. Conductors (Above Grade)		LS or LF		$_____
	K. Conductors (Below Grade)		LS or LF		$_____
	L. Pull Boxes		LS or EA		$_____
	M. Junction Boxes		LS or EA		$_____
	N. Short Circuit Coordination Study, Arc Flash		LS		$_____
	O. Lighting		LS or EA		$_____
	P. Emergency Standby Generator Terminal Box		LS		$_____
	Q. Pressure Transducers		LS or EA		$_____
	R. Meters		LS or EA		$_____
	U. Other Instrumentation		LS		$_____
	V. Security Systems		LS or EA		$_____
9	Preparation of Operation & Maintenance Manuals		LS		$_____

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
10	Equipment Startup and Performance Testing		LS		$_____
11	Equipment Training		LS		$_____
12	Performance of Live Operational Testing		LS		$_____
TOTAL (MUST EQUAL CONTRACT AMOUNT)					$_____

DO NOT SUBMIT THE SCHEDULE OF VALUES WITH YOUR BID PROPOSAL PACKAGE

Notes:

(1) These work and equipment items shall be broken down by area or facility.

(2) Concrete placements shall be broken down into forming, placement of rebar, placement of concrete, and curing (i.e. successful cylinder breaks). If Schedule of Values does not break down concrete placements into these subcategories, payment will not be made until concrete placements are complete.

END OF SECTION

SECTION 01300
CONTRACTOR SUBMITTALS AND REQUESTS
TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 Description

This Section covers requirements for submittals and forms a part of all other Sections in which submittals are specified or required. This Section also covers Contractor's Requests for Information and Requests for Change.

Submittal Requirements Included in this Section

A. Contractor's Construction Schedule
B. Shop Drawings
C. Material Samples
D. Operation and Maintenance Manuals
E. Requests for Substitutions or Equals
F. Record Drawings

Contractor Requests Included in this Section

A. Requests for Information
B. Requests for Change

1.02 CPM Progress Schedule

Contractor shall submit to Owner a CPM progress schedule to demonstrate the Contractor is sequencing work activities in accordance with the Contract Documents constraints and to assist the Owner in planning the Owner's inspection and operation activities.

A. Within thirty (30) days of Notice to Proceed (or within forty five (45) days of Notice of Award), Contractor shall submit a Critical Path Method (CPM) analysis for construction progress control, prepared on 11" x 17" charts. All construction activities and procurement shall be indicated in a time scaled format and a calendar shall be shown on all sheets along the entire sheet length. Each activity arrow or node shall be plotted so that the beginning and ending dates of said activity can be determined graphically by comparison with the calendar scale. All activities shall be shown using the symbols that clearly distinguish between critical path activities, non-critical activities, and free float for each non-critical activity. All non-critical path activities shall show estimated performance time and free float time in scaled form.

B. The duration estimate indicated for each activity shall be computed in working days and shall be shown on the construction schedule in calendar days. It shall represent the single best estimate considering the scope of the work and resources planned for the activity. Except for certain non-labor activities, such as curing concrete or delivering materials, activity duration shall not exceed ten (10) working days (fourteen (14) calendar days), nor be less than one (1) working day unless otherwise accepted by Owner.

C. Contractor shall revise and resubmit the CPM progress schedule monthly, flagging all slippages and missed mile posts. Contractor shall attach a narrative description of proposed corrective actions to the resubmitted CPM progress schedule, including the following minimum information for each activity and critical path item:

1. Date of initial shop drawing submittal, as applicable.
2. Engineers time for review of shop drawings.
3. Ordering dates for long lead time items.
4. Dates for materials onsite.
5. Early start work dates.
6. Early finish work dates.
7. Late start work dates.
8. Late finish work dates.
9. Date of initial submittal of operation and maintenance manuals.
10. Date of final submittal of operation and maintenance manuals.
11. Testing and cleanup.
12. Final completion.

Contractor shall modify any portions of the construction schedule that become infeasible due to activities behind schedule or for any other valid reason. Any activity that cannot be completed by its original latest completion date shall be deemed to be behind schedule.

D. The CPM progress schedule must be submitted to the Owner before the monthly progress payment is made. Scheduling and completion of the project in a timely manner and per Contract completion time, is solely the Contractor's responsibility. The CPM schedules submitted to the Owner shall not modify or revise any Contract provisions presented in the Contract Documents.

E. Although the Owner may provide commentary relative to the Contractor's CPM schedule, the schedule (and related schedule updates) will not be "approved". The Owner will utilize the Contractor's schedules strictly for scheduling of necessary inspection and operations staff and for identifying any apparent conflicts, errors, or misunderstandings of Contract Document requirements by Contractor.

F. The scheduling and work progress is the total responsibility of the Contractor, and work shall be performed to meet the Contract Completion Times or Dates specified in the Contract Documents.

1.03 Shop Drawing Submittal

A. Unless otherwise specified in the Contract Documents, Contractor shall furnish for all equipment and materials to be furnished and installed for the project at least four (4) copies of each shop drawing for Owner's review and approval. Up to three (3) copies will be retained for Owner's use, and the remaining copy will be returned to Contractor.

The term "Shop Drawings" as used herein shall be understood to include all data covering all equipment, equipment components, fabricated materials, and furnished materials.

Data shall include, but shall not be limited to, design calculations, equipment drawings, fabrication and installation drawings, erection drawings, mix designs, operating instructions, catalog sheets, data sheets, lists, graphs, and similar items. Data shall demonstrate full compliance with the Contract Documents.

Contractor shall submit shop drawings in a timely manner. Contractor shall allow sufficient time for Owner's review and approval of shop drawings. Contractor shall be responsible for any project delays resulting from late submittal of initial shop drawings or resubmittal of corrected or revised shop drawings.

B. Method of Submittal

Contractor shall deliver shop drawings submittals by means of dated, signed, and sequence numbered transmittals on Contractor's letterhead. Contractor shall clearly describe the submittal contents, identifying whether initial or subsequent submittals and stating the drawing numbers and specification sections, articles, and paragraphs to which the shop drawings pertain. All data sheets, catalog cuts, or drawings showing more than the particular item under consideration shall be clearly marked to delete all but the applicable information. All data sheets, catalog cuts, or drawings shall be clearly marked to delineate all proposed material and/or equipment options and accessories.

C. Deviations or Exceptions from Contract Documents

Where proposed equipment or materials, equipment components, equipment functions, or equipment operations deviate from the specifications and whenever exceptions to the specifications are taken, it shall be clearly noted on the shop drawing submittals. Deviations shall include references to the specific sections, parts, and paragraphs or drawing numbers and notes for which the deviations or exceptions are made.

D. Contractor's Review

All shop drawing submittals shall be carefully reviewed by Contractor prior to submission to Owner. Contractor shall indicate by a signed and dated stamp on the submittal that Contractor has checked the shop drawings as being correct and in strict conformance with the Contract Documents. When applicable, Instrumentation Subcontractor is also required to indicate by a signed and dated stamp on the submittal that Instrumentation Subcontractor has checked the shop drawings as being correct and in strict conformance with the Contract Documents. Shop drawings not so reviewed by Contractor (or Instrumentation Subcontractor, if applicable) may be returned without action taken by Owner, and any delays caused thereby shall be the responsibility of the Contractor.

During Contractor's review of shop drawings, Contractor is expected to thoroughly review all applicable portions of the Contract Documents for which shop drawings apply. This includes cross checking: General Drawings, Civil Drawings, Mechanical Drawings, Structural Drawings, Electrical/Instrumentation Drawings, Architectural Drawings, Landscape/Irrigation Drawings, and all applicable portions of the Specifications. Contractor shall bring any conflicts, errors, or apparent omissions to Owner's attention in writing during the shop drawing submittal process. If Contractor fails to bring conflicts,

errors, or apparent omissions to Owner's attention during the shop drawing submittal process, Contractor may be required to remove and reconstruct completed work or perform corrective work at Contractor's expense (all as determined by Owner).

E. Owner's Review

1. Owner's review of the shop drawings submitted by Contractor will cover only general conformity to the Contract Documents. The review of shop drawings shall not relieve Contractor of full responsibility for any deviation from the requirements of the Contract Documents, or for providing a complete and operational system per the intended function. As specified above, deviations or exceptions to the Contract Documents (in addition to any conflicts, errors, or apparent omissions in the Contract Documents) shall be clearly indicated on the Contractor's shop drawing submittal. Contractor shall be responsible for any errors or omissions in the shop drawings and for the accuracy of dimensions, quantities, and the design of adequate connections and details. Contractor is also responsible for any conflicts, errors, or apparent omissions in the Contract Documents that are not brought to the Owner's attention during the shop drawing submittal process.

2. Unless specified elsewhere, Owner will return one (1) set of shop drawing submittals to Contractor with his comments noted thereon, within thirty (30) working days following their receipt by Owner. Alternatively, Owner may elect to provide his comments to Contractor via Submittal Comment Sheet. An example Submittal Comment Sheet is attached in this Section for Contractor's reference. Contractor is expected to thoroughly review the Owner's comments, redlines, and dimensional changes for accuracy, and advise if complying with same would prevent the Contractor from providing a complete and operational system per the intended function. It is expected that Contractor shall prepare his submittals in such a manner that he is able to obtain a complete and acceptable submittal by the second submission. Owner reserves the right to deduct monies from the amounts due to Contractor to cover the cost of the Owner's review beyond the second submission. Reimbursement to Owner shall be made by deducting such cost from the Contractor's subsequent payment requests. The reimbursements will be calculated at a flat rate of $200 per hour.

F. Corrections and Resubmittals

Contractor shall make all required corrections and shall resubmit the required number of corrected shop drawings until found in general conformance with the Contract Documents and design concept of the project. Contractor shall respond to all of the Owner's submittal review comments (even if the response is that the comment will be addressed at a later date or under a separate submittal). If Contractor fails to address all submittal review comments, Owner reserves the right to return the entire submittal without review and any delays caused thereby shall be the responsibility of the Contractor. No work which requires shop drawing submittals shall be purchased or commenced until the pertinent shop drawings have been submitted, reviewed, and approved.

1.04 Material Samples Submitted

A. General

Whenever in the Contract Documents material samples are required, Contractor shall submit to Owner not less than two (2) samples of each such item for review and approval, all at no additional cost to Owner. Upon receiving approval by Owner, one (1) set of the samples will be stamped and dated by Owner and returned to Contractor, and one (1) set of samples shall remain at the job site until completion of the work.

B. Delivery

Samples, as required herein, shall be submitted for approval at least thirty (30) days prior to ordering such material for delivery to the jobsite.

C. Identification

Contractor shall label or tag each sample, or set of samples, identifying the manufacturer's name and address, brand name, catalog number, project title, and intended use.

D. Colors, Patterns, and Textures

For items required to be of selected colors, patterns, textures, or other finish, Contractor shall submit sufficient samples to show the range of shades, values, patterns, textures, or other features corresponding to the instructions and requirements specified.

1.05 Operation and Maintenance Manuals

A. Contractor shall provide to Owner six (6) sets of detailed operation and maintenance (O&M) manuals for all mechanical and electrical equipment furnished. Each set shall consist of one (1) or more volumes, each volume shall be bound in a standard size, 3-ring, loose leaf, vinyl plastic hard cover binder suitable for bookshelf storage. Binder ring size shall not exceed 2.5". Binder(s) shall be provided with the following identification inscribed on the cover(s): "Owner's name, project name, Equipment Operation and Maintenance Manual, Volume No." Each volume shall have a table of contents which indicates all equipment in the O&M manual and tabbed divider sheets placed before each section. The O&M manuals shall include (but not be limited to) the following information:

Installation and Operation

1. Installation Instruction
2. Design Capabilities
3. Operating Parameters and Recommended Ranges
4. Specific Equipment Installed, Model No., Serial No., etc.
5. General Literature
6. Operating Instructions
7. Special Problems or Precautions and Emergency Procedures
8. Safety Provisions and Precautions

Maintenance

1. Assembly, Disassembly, and Reassembly
2. Parts List, Including Drawings (Blowup Drawings Preferred)
3. Lubrication Type and Schedule
4. Preventative Maintenance Schedule
5. Recommended Replacement Parts Inventory
6. Details of Calibration and Adjustment
7. Wiring Diagrams (as Installed)
8. Completed Equipment Maintenance Data Sheet (Copy of Form Attached)
9. Equipment Warranties
10. Name, Address, and Phone Number of Local Parts Distributor and Service Center.

B. All O&M manuals shall be submitted to Owner in final form not later than thirty (30) days before startup; all deficiencies contained therein shall be corrected by Contractor within thirty (30) days from the date of written notification by Owner; any deficiencies or changes noted during startup shall be corrected by Contractor and incorporated into the final O&M manuals.

1.06 Requests for Substitutions

A. Any reference in the Contract Documents to any item of equipment or material, by manufacturer's name, make, or other proprietary identification is intended to establish the type, function, and quality required. If the manufacturer's name is followed by the words "or equal" or "or approved equal", indicating that a substitution is permitted, such items of equipment or materials manufactured by others may be substituted provided sufficient information is submitted by the Contractor to allow the Owner to determine that such items of equipment or materials are equivalent to those named in the Contract Documents, subject to the following requirements:

1. Contractor shall demonstrate equality as to type, function, and quality of each substitute item of equipment or material. Owner shall be the sole judge as to equality; Owner's decision shall be final.

2. Contractor shall, within 30 days after Notice to Proceed or within 45 days after award of contract, make written application to Owner to furnish or use a substitute item of equipment or material.

3. Contractor shall submit a list of five (5) installations utilizing the substitute item of equipment or material, including location, contact information (name and phone numbers), and dates of initial operation. The reference provided may be used in part as a basis for establishing the ability of a manufacturer to meet the performance requirements of the specification.

4. Contractor shall submit documentation that the substitute item has been in use or operation for a minimum of five years (unless noted otherwise). Documentation shall include location and references telephone numbers that are familiar with the item.

5. Contractor shall provide Owner with all requested data in order to evaluate proposed substitution.

6. Acceptance by the Owner of a substitute item shall not relieve Contractor of the responsibility for full compliance with the Contract Documents and for adequacy of the substitute item. Contractor shall be responsible for any changes and costs which may be required for substitutions.

7. Owner shall be allowed a reasonable time in which to evaluate each proposed substitute. Owner will record the period of time required to evaluate substitutions; Contractor shall reimburse Owner for charges whether or not the proposed substitute is accepted. Reimbursement to Owner shall be made by deducting such cost from the Contractor's subsequent payment requests. The reimbursements will be calculated at a flat rate of $200 per hour.

1.07 Record Drawing Submittal

A. Contractor shall keep and maintain at the jobsite one (1) set of record drawings. Contractor shall mark on drawings all changes in project conditions, locations, configurations, and any deviations which may vary from the details represented on the original Contract Drawings, including, but not limited to, buried or concealed construction and utility features which are revealed during the course of construction. Contractor shall record the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings.

Said record drawings shall be supplemented by detailed sketches as necessary to indicate the work actually constructed. These master record drawings of Contractor's representation of as-built conditions, including all revisions made necessary by addenda, change orders, and the like, shall be maintained up-to-date during the progress of the work. Record drawings shall be accessible to Owner at all times during the construction period and shall be delivered to Owner upon completion of the work.

B. Payments pursuant to partial payment will not be made if the record drawings are not kept current, and if the record drawings, showing all variations between the work as actually constructed and as originally shown on the Contract Drawings or other Contract Documents, have not been inspected by Owner.

C. Final payment will not be acted upon until Contractor has prepared and delivered complete, current record drawings to Owner. Said record drawings which must reflect all completed work, may be in the form of a set of prints with carefully plotted information overlaid in colored pencil.

1.08 Contractor's Requests for Information (RFIs)

Contractor may submit a Request for Information when it is necessary to obtain information or clarification regarding: requirements of Contract Documents, interpretation of Contract Documents, or apparent errors or omissions in Contract Documents. An RFI may also be submitted to state the Contractor's concern related to the omission or misapplication of a product,

or to call to Owner's attention a superior product based on the Contractor's expertise. Contractor is expected to use the RFI form attached to this Specification. Contractor is not responsible for the Owner's costs associated with evaluating and responding to an RFI; however, Owner will not review Contractor's RFIs that are in fact Requests for Changes (RFCs), as determined by Owner. In such cases, Contractor will be required to resubmit on the appropriate RFC form. See Part 1.09 herein. Contractor shall allow Owner up to thirty (30) working days to respond to Contractor's RFIs. As such, Contractor is expected to thoroughly review all applicable portions of the Contract Documents for which the work is contemplated well in advance of Contractor commencing the actual work. This will allow Contractor sufficient time to prepare the necessary RFIs and will allow Owner sufficient time to evaluate and prepare responses to same.

Within one week of receiving an RFI response from Owner, Contractor is required to notify Owner (in writing) if there are any cost or schedule impacts associated with Owner's response. Said notification shall be submitted as a Request for Change Order. All Requests for Change Order shall be submitted with proper justification and supporting documents, as determined by Owner. If no such advisement is made by Contractor, it will be understood that Contractor understands and accepts Owner's response, and that there are no cost or schedule impacts to the Contractor associated with same (even if the RFI response constitutes a change to the Contractor's scope of work).

1.09 Contractor's Requests for Change (RFCs)

Contractor may submit a Request for Change when Contractor proposes a change in the Contract requirements. All change requests shall be submitted on the RFC form attached to this Specification. As shown therein, Contractor is required to fully describe the benefit(s) to the Owner, benefit(s) to the Contractor, the cost and/or schedule impact(s) associated with the requested change, along with whether or not Contractor proposes or requires a Contract Change Order for implementing the change. Except for as described in Part 1.08 herein, any Contractor RFC that is submitted on the RFI form will be returned without review.

As noted on the RFC form, it is understood that certain RFCs can be responded to promptly, with minimal expenditures required by Owner. It is also understood that other RFCs require significant expenditures by Owner in order to properly evaluate and respond to Contractor's RFC. For those RFCs that fall in the latter category, Owner will provide an estimate (time and money) to Contractor as an initial response to RFC. Contractor may then elect to have Owner proceed with evaluating Contractor's RFC (with estimated value deducted from Contractor's Contract with Owner), or elect to withdraw Contractor's RFC.

1.10 Submission in Electronic Media Format

In addition to providing paper (i.e. hard) copies, all documents (RFIs, RFCs, Submittals, Change Order Requests, etc.) shall be submitted electronically.

A. General

Provide all information in searchable portable document file (PDF) format; PC compatible using Windows operating system as utilized by the Owner. All information provided shall be consolidated to one PDF in the latest version of Adobe Acrobat, with a Table of Contents and bookmarks for each major section (for each submittal). When required below (or if required otherwise by Owner), documents shall also be provided

electronically in Word format. If document exceeds the size in which Owner can receive by email (generally larger than 10 MB), the document shall be uploaded to the Owner's FTP site (if available), or saved onto a CD and transmitted to Owner.

B. Contractors using other software shall be required to provide to the Engineer conclusive evidence of 100 percent data transfer capability.

C. Shop Drawing Submittals

In addition to submitting four (4) hard copies of all shop drawing submittals (see Part 1.03 herein), Contractor shall submit shop drawing submittals electronically in PDF format (searchable from bookmarks). This applies to all text documents, manufacturer's literature, diagrams, and all graphic submittals. Provide one (1) PDF file using the latest version of Adobe Acrobat.

D. O&M Manuals

In addition to submitting six (6) hard copy sets of all O&M manuals (see Part 1.05 herein), Contractor shall submit six (6) copies of a single DVD containing the entire O&M manual in PDF format (searchable from Table of Contents and bookmarks).

E. RFIs, RFCs, Correspondence, and Change Order Requests

Provide electronic submission in Word and PDF format, plus one (1) hard copy. If required by Owner, provide one (1) CD (copy) containing the entire document with attachments.

SAMPLE
SHOP DRAWINGS/SUBMITTAL REVIEW COMMENT SHEET

Job No.: Date:

Project:

Owner:

Contractor:

Submittal No.: 15

Description: Vertical Turbine Pumping Units

COMMENTS:

Contractor shall **revise and resubmit** complete submittal addressing the following comments:

1. Vertical Turbine Pumping Units

   A. Per Parts 1.02.B.4 and 1.02.C.4 of Specification Section 11310, each fabricated steel discharge head shall be provided with an AWWA C207 Class E flanged base in lieu of proposed bottom plate.

   B. Although a +5% to +8% increase in total dynamic head is allowed by the Hydraulic Institute, the total dynamic head for each proposed pumping unit at the design flow rate shall be as specified in Parts 1.02.B.1 and 1.02.C.1 of Specification Section 11310. If said design condition causes the proposed motor to be overloaded (at 1.0 service factor) at any point on the pump performance curve, the pumping unit impellers shall be trimmed accordingly to reduce the motor load to non-overloading conditions (at 1.0 service factor).

   C. Although the pump cans will be provided by others, per Part 1.05 of Specification Section 11310 (Schedule A), the manufacturer shall verify the applicability of pumping equipment with respect to NSPHa, suction piping, pump can and discharge geometry to ensure prevention of cavitation, vibration, surging, overheating, corrosion, and vortexing. Refer to the Construction Drawings and piping/pump can fabrication drawings for suction and discharge piping and pump can information.

   D. Per Part 2.02.B of Specification Section 11310, pumping unit impellers shall be hydraulically balanced in addition to dynamically balanced.

   E. Per Part 3.02 of Specification Section 11310, the Contractor shall be responsible for installation. However, per Part 3.04 of Specification Section 11310, Contractor shall submit a letter to the Owner confirming that all pumping equipment was inspected, operation checked, and installation approved in writing by the pumping equipment supplier prior to operation of the equipment.

F. Per Part 3.03 of Specification Section 11310, the pump manufacturer's representative shall supervise the field acceptance testing and shall certify in writing that the equipment and controls have been properly installed, aligned, lubricated, adjusted, and readied for operation.

G. Per Part 3.03.A of Specification Section 11310, vibration of complete pumping unit as tested in the field shall not exceed 0.0025" peak to peak amplitude when operating. If said maximum vibration amplitude is exceeded, the pumping units shall receive a final field trim balance.

H. Pump performance curves were not submitted for proposed pumping units as required per Parts 1.03 and 1.04 of Specification Section 11310. Submitted curves are not legible. Submit pump performance curves full size on 8-1/2" (ordinate) x 11" (abscissa) paper for proposed pumping units including the following:

1) Shutoff head, head versus capacity, pump bowl efficiency versus capacity, and brake horsepower versus capacity, all for full operating range specified.

2) Certified values on each curve at all specified design points demonstrating compliance with the pumping unit requirements as outlined in Parts 1.02.B.1 and 1.02.C.1 of Specification Section 11310.

3) Arrows pointing to the limits of recommended stable operation between which pumps are to be operated to prevent surging, cavitation, and vibrations. Limits of operation shall be included on each speed curve provided for the FE/BWS pump.

I. Submitted pump manufacturer's brochure is for M Series Vertical Turbine Pumps. Submitted bill of materials, pump data sheets, pump dimensional sheets, and Operation and Maintenance manual indicate the proposed pumps are Model VIC. Submit data confirming that proposed pumps are either M Series or Model VIC. Submit manufacturer's brochure corresponding to the proposed pumps.

J. Per Parts 1.02.B and 1.02.C of Specification Section 11310, pumping units shall operate with suction can pressure ranging from 0 to 5 psi. Submitted hydraulic analyses indicate the pump is suitable for operating with suction can pressure of 0 psi. Submit data indicating that pumping units are suitable for operation within the specified suction can pressure range.

K. The FE/BWS pump discharge head shall be provided with a 36" Class E flanged base (46" O.D.) to match the approved pump can fabrication drawings in lieu of proposed 48.75" O.D. bottom plate.

L. Per Part 1.02.C.4 of Specification Section 11310, the discharge head for the RCW unit shall be provided with the dimensions shown on the Construction Drawings. The dimension shown on the Construction Drawings from the bottom of the discharge head base flange to the centerline of the discharge is 26-1/12". Submitted dimensional drawing for the RCW pump discharge head indicates this dimension will be 27". Revise drawings to include the required 26-1/2" dimension.

M. Per Part 2.02.A of Specification Section 11310, the pump bowls shall be lined with vitreous porcelain enamel in lieu of submitted epoxy. Per submitted manufacturer's vertical turbine pump brochure, glass-lined cast iron bowls is a standard design feature. Submit manufacturer's product data sheets on glass lining in lieu of epoxy coating.

N. Per Part 2.02.A of Specification Section 11310, the pump bowls shall be of Class 30 (or better) cast iron and have minimum tensile strengths of 30,000 psi. Submit data verifying same.

O. Per Part 2.02.B of Specification Section 11310, the pump impellers shall be of the enclosed type. Submit data verifying that proposed impellers are of the enclosed type.

P. Per Part 2.02.H of Specification Section 11310, the strainer shall be provided with cross vanes for vortex suppression. Submit manufacturer's product data sheets for proposed strainer verifying same.

Q. Per Parts 1.02.B.8 and 1.02.C.8, basket strainer shall be attached to pump with stainless steel fasteners. Submit data indicating same.

R. Per Parts 1.02.B.6, 1.02.C.6, and 2.02.J of Specification Section 11310, the top shaft shall be two-piece with a coupling accessible within the pump discharge head. Said coupling shall be flanged. Submit manufacturer's data sheets for required coupling.

S. Nameplate data was not provided with submittal. Submit proposed nameplate for pumping units per Part 2.04 of Specification Section 11310.

T. Manufacturer's proposal to provide John Crane Type 1 mechanical seal in lieu of specified John Crane Type 21 mechanical seal is acceptable. However, resubmit manufacturer's product data sheets for proposed mechanical seal clearly delineating the proposed materials of construction. Provide drawing detail of mechanical seal as installed in discharge head, including all necessary piping and drain line to pump can.

U. Proposed Tnemec N140 epoxy coating is accepted for coating the pump head and column.

2. <u>Vertical Hollow Shaft Electric Motors</u>

A. Although proposed motors will be balanced to limit the vibration to 0.08 inches per second, the total vibration for the assembled pumping unit as tested in the field shall not exceed 0.0025" peak to peak amplitude when operating.

B. Per Part 2.06.N of Specification Section 11310, the lubrication system shall have sufficient oil storage and cooling capacity to limit the oil bath temperature rise to 45° C above 40° C ambient temperature. Proposed exception states that Emerson's standard oil bath temperature rise will be provided. Submit data for Emerson's standard oil bath temperature rise design.

C. Manufacturer's statement that motors will be provided with "Emerson standard oversized main conduit box" is unacceptable. Per Part 2.06.R of Specification Section 11310, motors shall be equipped with extra-large heavy duty split type conduit boxes. Manufacturer's catalog information indicates that conduit boxes one size larger than standard are available for vertical hollow shaft motors. Submit manufacturer's product data sheets indicating proposed motors will be provided with required conduit boxes.

D. Proposed 7.5 hp TEFC motor shall be provided with drain and breather elements (brass construction). Submit written confirmation of same.

E. The requirements set forth in Specification Section 16150 do not apply to the proposed vertical hollow shaft motors; therefore, the submitted exceptions to same are not necessary.

F. Submitted data sheets for the FE/BWS pumping unit motor include an 1,800 rpm motor. Per submitted pumping unit data and Part 1.02.B.1 of Specification Section 11310, a 1,200 rpm motor is required for said pumping unit. Submit manufacturer's product data sheets for required motor.

G. Submitted data sheets for the proposed motors include an ambient temperature rating of 40° C (104° F). Per Item 10 of the Supplemental Special Requirements, all equipment shall be designed for maximum ambient temperature of 120° F. Submit revised motor data sheets demonstrating that motors will be provided with required temperature rating suitable for continuous operation at 120° F ambient temperature.

H. Per Part 2.06.L of Specification Section 11310, motors shall be equipped with angular contact ball thrust bearings. Submit data verifying required bearings will be provided. Submit motor thrust capacity for one year L-10 minimum life.

I. Per Part 2.06.O of Specification Section 11310, motor thermal protection shall be set to open control circuit at 135° C. Submit data verifying same. Contractor shall coordinate installation of motor thermal control modules (Siemens Thermasentry) to be provided by the motor manufacturer with the MCC manufacturer for mounting in the respective bucket.

J. Not all nameplate data required per Part 2.06.T of Specification Section 11310 is included in submitted motor nameplate data. Resubmittal shall include all the requirements as set forth in the Specification for each proposed pumping unit, including connection nameplate data per Part 2.06.T.2 and bearing nameplate data per Part 2.06.T.3 of Specification Section 11310.

K. Proposed motors for the RCW pumping units are not required to be inverter duty.

L. Submit replacement parts list for proposed FE/BWS pump motor, similar to submitted replacement parts list for proposed RCW motor.

M. Submitted manufacturer's motor brochure is for Weather Protected Type 1 vertical motors. The proposed motor for the RCW pumping unit is Totally Enclosed Fan Cooled (TEFC). Submit manufacturer's product brochures for TEFC motors.

FOR ADDITIONAL COMMENTS, SEE THE FOLLOWING SHEETS AND/OR DRAWINGS:

N/A

☐ ACCEPTED	☐ REJECTED
☒ REVISE AND RESUBMIT	☐ FURNISH AS CORRECTED
☐ SUBMIT SPECIFIED ITEMS	☐ _____

Corrections or comments noted on shop drawings do not relieve contractor of responsibility to comply with Contract Documents. Shop drawing review is hereby performed only to verify general compliance with the Contract Documents and general conformance with the design concept.

Date: _____ By: _____

EQUIPMENT MAINTENANCE DATA SHEET

PREVENTIVE MAINTENANCE PROGRAM	**EQUIPMENT RECORD NUMBER**		
EQUIPMENT DESCRIPTION	**ELECTRICAL OR MECHANICAL DATA**		
Name:	Nameplate Horsepower:		
Serial No.:	Model:		
Vendor:	Catalog Number (polyphase motors):		
Vendor Address:	Type:		
	Manufacturer:		
Vendor Rep:	Voltage:	Measured Current:	Nameplate Current:
Phone:	Phase:	Overload Relay Setting:	rpm:

MAINTENANCE AND LUBRICATION WORK TO BE DONE	Frequency*

SPARE PARTS LIST		**FUSES/LAMPS/SEALS**		
Quantity	Part & Part Number	Qty	Size	Type & Ordering Description

WARRANTY AND OPERATING REQUIREMENTS AND REFERENCE

*D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually

SAMPLE
EQUIPMENT MAINTENANCE DATA SHEET

PREVENTATIVE MAINTENANCE PROGRAM	EQUIPMENT RECORD NUMBER		
EQUIPMENT DESCRIPTION	**ELECTRICAL OR MECHANICAL DATA**		
Name: Influent Pump No. 1 Tag No.: P01-1	Nameplate Horsepower: 15 HP		
Serial No.: 123456ABC	Model: 140T Frame Serial No. 987654ZY Class F Insulation w/ Space Heater		
Vendor: ABC Pump Co.	Catalog Number (polyphase motors): M36999b		
Vendor Address: 1234 Richter Avenue Irvine, CA 92604	Type: Vertical Turbine Pump, Model VTR14 with 3 stages, impeller 147, and 12 1/2" trim.		
	Manufacturer: DEF Motors, Inc.		
Vendor Rep: XYZ Equipment, Inc.	Voltage: 460	Measured Current: 18 amps	Nameplate Current: 20 amps
Phone: 949-752-0505	Phase: 3	Overload Relay Setting: 25 amps	rpm: 1,800

MAINTENANCE AND LUBRICATION WORK TO BE DONE	Frequency*
1. Operate valves and check such things as a) bearing temperature, b) changes in running sound, c) suction and discharge gage readings, d) pump discharge rate, and e) general condition of the drive equipment.	D
2. Check packing.	D
3. Check pumping unit for any dust, dirt or debris.	W
4. Lubricate bearing frame and motor bearings (consult manufacturer's instructions for type of grease or oil).	Q
5. Disassemble and change or repair the following: a) impeller, b) shafts, c) shaft sleeve, d) rotary seals, and e) sleeve bearings.	A

SPARE PARTS LIST		FUSES/LAMPS/SEALS		
Quantity	Part & Part Number	Qty	Size	Type & Ordering Description

WARRANTY AND OPERATING REQUIREMENTS AND REFERENCE

For manufacturer's instructions regarding installation, operation, maintenance and troubleshooting of this equipment, see Volume ____, Section ____.

*D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually

SAMPLE

CONTRACTOR'S REQUEST FOR INFORMATION (RFI) #_____

To (Engineer):	
From (Contractor):	
Subject:	
Reference: Construction Drawing:	Specification (Section and Page):
REQUEST	
Information is requested as follows:	
Information Requested By (Name):	**Date**:
Response Requested By (Date):	
Received by Krieger & Stewart (Date):	
RESPONSE	
Response to Information Request:	
Response By (Name):	**Date**:

Final Distribution:

SAMPLE

CONTRACTOR'S REQUEST FOR CHANGE (RFC) #_____

To (Engineer):	
From (Contractor):	
Subject:	
Reference: Construction Drawing:	Specification (Section and Page):
REQUEST	
The following change is requested:	
Change Requested By (Name):	**Date**:
Response Requested By (Date):	
Received by Krieger & Stewart (Date):	
Benefit to Owner:	
Benefit to Contractor:	
Cost and/or Schedule Impact:	
Change Order Required or Proposed? ____ YES ____ NO	
RESPONSE	
Response to Change Request: (1)	

RESPONSE (Continued)	
Response By (Name):	**Date**:

(1) It is understood that certain RFCs can be responded to promptly, with minimal expenditures required by Owner. It is also understood that other RFCs require significant expenditures by Owner in order to properly evaluate and respond to Contractor's RFC. For those RFCs that fall in the latter category, Owner will provide an estimate (time and money) to Contractor as an initial response to RFC. Contractor may then elect to have Owner proceed with evaluating Contractor's RFC (with estimated value deducted from Contractor's Contract with Owner), or elect to withdraw Contractor's RFC.

Final Distribution:

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SECTION 09970
WELDED STEEL WATER STORAGE RESERVOIR
COATING SPECIFICATIONS

1. Scope

This specification applies to both existing reservoirs. Areas to be coated shall consist of all interior surfaces, including but not limited to shell, roof plates, framing, columns, reinforcing, ladder, floor, piping, and access manholes.

All coating work shall be guaranteed and warrantied for three (3) years. Contractor shall provide a letter with the first submittal package stating same. A sample letter is provided at the back of this Specification Section.

2. Specifications and Standards

All surface preparation and material application shall comply with American Water Works Association Standard D-102, latest edition, Steel Structures Painting Council Specifications, and manufacturer's recommendations.

3. Submittals

All submittals shall be in accordance with the Special Conditions and Specification Section 01300 (Contractor Submittals and Requests). Contractor shall submit complete information and technical data for all material and components, including, but not limited to, the following:

A. Construction schedule showing order in which Contractor proposes to carry out work, dates of anticipated commencement and completion of work and salient components thereof, and estimated percentage of work to be completed at any time during construction period.

B. Manufacturer's data sheets for each coating and caulking material to be used.

C. Manufacturer's recommendations for height profile for each coating material to be used.

The District shall approve the above work prior to Contractor beginning any work.

4. Sequence of Work

Unless specified otherwise, reservoir coating shall be performed in the following sequence:

A. Reservoir interior surfaces (other than floor).

B. Reservoir floor surfaces.

After the reservoir interior surface (other than floor) coating has been completed, The District will inspect same for specified dry film thickness and holidays. Said inspection will require approximately seven working days. Contractor shall temporarily terminate work until said inspection is completed. Contractor shall repair all defects in reservoir interior surface (other than floor) coating prior to beginning reservoir floor coating work. All repairs shall be performed as directed by the District at no cost to the District. If repair work is required, the District will inspect same and additional time will be required therefor. Contractor shall temporarily terminate work until said inspection is completed.

After the reservoir floor coating has been completed, Contractor shall perform holiday detection on same. Contractor shall repair all defects in reservoir floor coating at no cost to the District until all holidays are eliminated. Lower shell course shall be reinspected for damage caused to coating by floor sandblasting operations. All holidays shall be repaired by Contractor.

Repair work performed by Contractor will not justify adjustment of Contract Completion Date(s). Said work will subject Contractor to liquidated damages if work extends beyond Contract Completion Date(s).

5. Inspection

Unless specified otherwise, inspection of the work shall be as follows:

A. Field Inspection

1) Equipment

At the first on site inspection, Contractor shall provide the District with written information concerning all equipment to be utilized. Said information shall include type, model, serial number, and year manufactured. Contractor shall provide any additional information requested. All equipment shall be clean and in good working order with all appropriate safety devices. Equipment which leaks, routinely malfunctions, creates a safety hazard, creates an environmental hazard, or fails to meet the District or manufacturer requirements shall be removed from the site.

2) Surface Preparation

To facilitate inspection, Contractor shall on the first day of sandblasting operations, sandblast metal panels to the degree specified herein. After the District determines that specific panels meet the requirements of the specification, they shall be coated with a clear, non-yellowing finish (provided by Contractor). Panels shall be prepared for each type of sandblasting specified and shall be maintained and utilized by the District for all Contract work.

After each section of the reservoir has been sandblasted, it shall be inspected and approved by the District prior to the application of any

coating. The District will inspect for specified height profile by the use of a profile meter. To allow the District the opportunity to inspect each sandblasted area, Contractor shall clean said surfaces with a fine bristle broom and air and furnish scaffolding and lighting (including moving of same) to permit inspection as requested by the District.

B. Material Preparation

The District shall approve all onsite coating material preparation including unsealing and opening of all material containers, material mixing, mixing equipment, addition of thinners, and temperature of all material prior to application.

C. Coating

Each coat shall be approved by the District for specified cleaning before subsequent coats are applied. All areas coated or painted without said approval shall be sandblasted to remove all coatings and recoated after the specified inspection.

E. Holiday Detection and Dry Film Thickness Verification

Dry film thickness verification and documentation will be performed by the District. Holiday inspection shall be performed by the Contractor in the presence of the District. Contractor shall provide all holiday inspection equipment and a minimum of two of his personnel at the top of each scaffold to perform the holiday inspection. The District will provide one inspector for each scaffold being used by Contractor for holiday detection to witness Contractor's performance. Contractor shall check every square inch of the interior coating, including nuts, bolts, ends of rafters, mating surfaces, etc. and shall mark and repair all holidays. All areas not meeting the specified dry film thickness and all areas with holidays shall be recoated and repaired by Contractor as directed by the District. All repairs shall be performed at no cost to the District.

G. Illumination and Scaffolding

Whenever and wherever required by Inspector, Contractor shall furnish illumination (level of illumination as determined by the District) and scaffolding (level of scaffolding as determined by the District) to permit inspection prior to acceptance of work. Contractor shall move lights and scaffolding as directed by Inspector to enable him to inspect all surfaces, inside and out.

H. Anniversary Inspection

An inspection of the protective coatings of the steel reservoir shall be conducted between the eleventh (11th) month and sixteenth (16th) month following completion of all coating and painting work. Representatives of the District, Contractor, and Coating Supplier shall attend this inspection. All work found to be defective at this time shall be repaired or replaced in accordance with the

original specifications and to the satisfaction of the District. All equipment, materials, and labor required to repair any defects in the steel reservoir coating shall be provided by the Contractor at no additional cost to the District. The Contractor shall disinfect the reservoir after repairs to the interior are completed, at no extra charge. The Contractor will be charged for all inspections required for remedial work. If the eleventh (11th) month inspection should occur at a time of high water usage, repair work may be postponed until a period of low usage at the District's discretion. Postponement shall not extend beyond the sixteenth (16th) month following completion of all coating work. The Contractor shall be notified of the eleventh month inspection, repairs required, and the date when the repair work may be performed.

I. Payment for Inspection

The District will provide one free inspection for each sandblasting, coating, and painting application. Contractor will be charged for all additional inspections of sandblasting, coating, and painting applications. The District will also provide one free final inspection consisting of dry film thickness measurements and holiday detection. If work does not meet requirements of these Welded Steel Water Storage Reservoir Coating Specifications, Contractor will be charged for all subsequent inspections required to ensure compliance with said Specifications.

6. Surface Preparation

All surfaces shall be sandblasted by the dry sandblasting method. Sand used in the sandblasting operation shall be washed and graded. It shall be free of contaminants that could interfere with adhesion of coating or paint to be applied. Maximum particle size of abrasive particles shall produce a height profile in accordance with the recommendations of the coating or paint manufacturer. At all times during the blast cleaning operations, means shall be employed to ensure that existing paint or coating shall not be exposed to abrasion from blast cleaning operations. All surfaces must be clean, dry, and free of any dirt, dust, grease, oil, salt, and other deleterious materials before any protective coatings or paints are applied.

A. Interior Surfaces

Preparation of all interior surfaces to receive protective coatings shall be blast cleaned to "near-white" metal in conformance with Steel Structures Painting Council Surface Preparation Specification SSPC-SP10 (95% of each square inch shall be free from all visible residues). For existing reservoirs, all existing coating shall be completely removed.

Wooden wedges shall be placed between roof plates and rafters. Wedges shall be positioned to provide a 1" minimum gap between roof plates and rafters. Roof plates shall not be bent or deformed while inserting wedges. Wedges shall be repositioned during blasting operations to ensure that all areas are blasted.

7. Materials

Protective coating materials shall be per Parts 10 and 11 below. Materials for interior coating shall not contain Tetrachloroethylene (PCE). All protection coatings shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1113. All materials including thinners shall be delivered to jobsite in original unopened containers bearing manufacturer's name, brand, and batch number. They shall not be opened or used until Inspector has physically inspected the contents and obtained necessary data from information printed on containers or labels. All materials opened or not approved shall be removed from the work site before any work shall begin. A request for material substitutions must be made and approved by the District in writing prior to submission of bids.

Only full, previously unopened containers of coating material shall be utilized during each coating session unless the Contractor receives District approval to do otherwise prior to opening the containers. Any mixed unused material shall be discarded. Partial amounts of dual component material shall be measured utilizing District approved measuring containers prior to mixing.

All thinners must be approved and measured prior to placement in the coating material. Any amount of thinner added to the coating material without District approval may result in the rejection of that material for use.

8. Application

A. First Coat

The application of the prime coat shall immediately follow surface preparation; it shall be completed within the period of an 8-hour working day. Contractor shall use a fine bristle broom and air to clean surfaces after sandblasting and prior to application of prime coat. Any such cleaned areas not receiving prime coat within said 8-hour period shall be reblasted prior to application of prime coat. All sandblasted areas shall be approved by the District prior to application of the coating. Any areas coated without the District's approval shall be resandblasted to remove all coating, inspected, and then recoated.

B. Additional Coats

Contractor shall allow previous coat to thoroughly dry as specified herein before cleaning same. Contractor shall use a fine bristle broom and air to remove dust and other matter from each coat prior to application of any additional coats. All areas to receive additional coats shall be approved by the District prior to application of said additional coats. Any areas receiving additional coats without the District's approval shall be resandblasted to remove all coating, inspected, and then recoated.

C. Special Coats

1) Inaccessible Areas

All interior surfaces that are inaccessible shall receive the complete coating system as specified herein. Such surfaces shall include but shall not be limited to the top flanges of rafters, the top flanges of girders, column caps, and column bearing plates.

Wooden wedges shall be placed between roof plates and rafters. Wedges shall be positioned to provide a 1" minimum gap between the roof plates and rafters. Roof plates shall not be bent or deformed while inserting wedges. Wedges shall be repositioned during coating operations to ensure that all areas are coated. All wooden wedge material adhering to the coating shall be removed and the coating repaired to the District's approval.

2) Brush Applied Coat

All sharp edges, nuts, bolts, welds, joints, connections, and similar surfaces shall receive a brush applied coat of the specified coating prior to application of each complete coat.

3) Caulking

Contractor shall fully seal with continuous caulking all interior roof joints. Contractor shall apply caulking a minimum of 72 hours following the application of the final coat of epoxy, and at least 72 hours prior to holiday detection of adjacent coated surfaces. The caulking shall be a two component, polyurethane-based sealant, meeting ASTM-C-920 and NSF standard for potable water contact. The coating shall be Sikaflex-2c, NS or District approved equivalent and shall be applied per manufacturer's instructions. Contractor shall thoroughly clean all epoxy coated surface areas with clean white rags prior to application of the caulking.

D. Ventilation

Ventilating fans shall be attached to all reservoir shell manholes to provide air exhaust near bottom of reservoir. All reservoir roof openings shall be left open to provide air supply. Fans shall be located as necessary to provide proper air movement throughout the entire reservoir.

1) During coating application, Contractor shall ventilate tank coating with ventilating fans with a capacity of at least 300 cfm per gallon of coating applied per hour.

2) At the end of each work day, Contractor shall force ventilate reservoir interior until the next work day with a minimum of one complete air change each hour. Contractor shall force ventilate reservoir interior over

weekends and holidays with one complete air change each hour. Ventilation fans shall operate 24 hours each day. Without restricting proper ventilation, Contractor shall prevent sand, dust or other material from adhering to the coating by the use of barriers, screen or other District approved methods. Damaged surfaces shall be repaired to the District's satisfaction.

3) After each reservoir interior coat has been completed, Contractor shall force ventilate reservoir interior for a minimum of 72 hours with one complete air change each hour. Ventilation fans shall operate 24 hours each day.

4) Following the application of each epoxy floor coating and as directed by the District, additional fans shall be located inside the reservoir to facilitate proper air movement throughout the lower portion of the reservoir. Combined capacity of additional fans shall equal one complete air change per hour. Floor surface area per fan shall not exceed 2,500 square feet. Placement of fans shall occur after coating has cured sufficiently to prevent damage to the floor coating. Additional fans shall operate a minimum of 48 continuous hours prior to placement of the next floor coating. Existing coatings shall be protected when placing fans and any damaged areas shall be repaired under the District's supervision and holiday tested at the Contractor's expense.

   Following acceptance of the floor coating by the District, said fans shall remain in continuous operation during the 14-day forced ventilation of the reservoir interior.

5) After reservoir interior coating has been completed, inspected, and accepted by the District, Contractor shall force ventilate reservoir interior for a minimum of 14 days with one complete air change each hour. Ventilation fans shall operate 24 hours each day.

6) Contractor shall furnish all required equipment and labor to ventilate reservoir interior including fans, generators, fuel, vandal proof protective barriers, wind barriers, and manpower to ensure adherence to the ventilation requirements.

E. Safety

During sandblasting operations and coating applications, Contractor shall use head protection, fire protection, and respiratory devices in accordance with AWWA D-102, latest edition. Use of these devices shall be mandatory and strictly enforced by the Contractor as his total responsibility. The District's representatives may not be continuously present and shall not be responsible or liable for enforcing Contractor's adherence to these and other lawfully mandatory safety practices.

F. Skilled Craftsmen

All work shall be performed by skilled craftsmen who are qualified to perform the required work in a manner compatible with the best standards of practice found in the trade.

G. Restrictions

1) Material shall not be applied when the surrounding air temperature or temperature of the surface to be coated is below 40°F. Material shall not be applied to wet or damp surfaces, in rain, fog, or when the temperature is less than 5°F above the dewpoint. Material shall not be applied when it is expected the air temperature will drop below 40°F or less than 5°F above the dewpoint within 8 hours after application of material.

2) Material shall not be applied when the surrounding air temperature or temperature of the surface to be coated exceeds 110° F. Material shall not be applied when the relative humidity exceeds 70 percent. Material shall not be applied when it is expected the air temperature or temperature of the surface will exceed 110° F within 2 hours following application of material.

3) Material shall not be applied when wind conditions may cause overspray, dust, sand or other material to adhere to the coated surface. Damaged surfaces shall be repaired to the District's satisfaction.

H. Curing of Reservoir Coating

Contractor shall provide all equipment and manpower necessary to provide continuous supplemental heat and dehumidification of the reservoir interior as required to maintain proper curing conditions as recommended by the coating manufacturer. Said requirement shall apply throughout coating and curing operations, including overnight, over holidays, over weekends, between coats, and during the fourteen (14) day curing period.

During weekends and during the fourteen (14) day curing period, Contractor shall monitor heating, dehumidifying, and ventilating equipment and shall provide fuel as required to keep equipment operating continuously. Contractor shall furnish fuel supply tanks with a minimum capacity for seventy-two (72)

hours of continuous heating. During weekends, holidays, and the fourteen (14) day curing period, Contractor shall provide all maintenance required to make immediate repair in the event of equipment failure.

9. Priming

Contractor shall prime all reservoir surfaces as follows:

A. Surface Preparation

All existing coating shall be removed from interior surfaces and all interior surfaces shall be cleaned to "near-white", all in accordance with the Contract Documents.

B. Application

Application of prime coat shall immediately follow surface preparation; it shall be completed within the period of 8 hours. Any such cleaned areas not receiving prime coat within said 8-hour period shall be recleaned prior to application of prime coat. All cleaned areas shall be approved by the District prior to application of any coating. Any areas coated without the District's approval shall be recleaned to remove all coating, inspected, and then recoated.

Upon completion of cleaning and priming, all coated components shall be cured for a minimum of two hours at 60° F prior to handling components.

C. Materials

All interior surfaces of reservoir shall be primed with materials listed in Parts 10 and 11 below.

10. Coating for Interior Surface of Floor and Bottom One-Half Foot of Shell and Appurtenances (AWWA Inside Coating System No. 1 - As Modified Herein): 100% Solids Epoxy

A. Prime Coat

None.

B. Finish Coat

Finish coat shall be 100% solids epoxy, Tnemec Series 22 Epoxoline, International Interline 975P, or approved equal; it shall consist of one or two coats applied to a minimum dry film thickness of thirty (30) mils.

C. Total Thickness

The total dry thickness shall be a minimum of thirty (30) mils.

D. Application Requirements

At least 72 hours shall elapse between coats. Materials shall be stirred thoroughly with a slow speed power mixer until a smooth uniform consistency is obtained. Compound shall be mixed in exact proportions specified by manufacturer. The material shall not be thinned except possibly in cold weather, and then only in strict accordance with the manufacturer's written recommendations. Coatings shall not be applied when the surface temperature of the area to be coated is below 60°F or above 100°F.

E. Dry Film Thickness Verification

The District will measure the thickness of each coating to ensure that the specified dry film thickness has been obtained and shall take final measurements 7 days after application of the finish coat.

F. Drying Time

A minimum of 14 days shall elapse between application of the finish coat and filling the tank with water for disinfection, filling, testing, and sampling.

G. Color

Each coat shall be a different color than the preceding coat. The final coat shall be white. All coats shall be NSF Standard 61 approved.

11. Coating for Interior Surface Other than Floor and Bottom One-Half Foot of Shell (AWWA Inside Coating System No. 2 - As Modified Herein): Epoxy, 15 Mils

A. Prime Coat

Prime coat shall be Tnemec Series L140F Pota-Pox Plus, ICI Devoe Bar-Rust 233H, or approved equal to a minimum dry film thickness of three (3.0) mils.

B. Intermediate Coat

First coat shall be Tnemec Series L140F Pota-Pox Plus, ICI Devoe Bar-Rust 233H, or approved equal; it shall consist of one coat applied to a minimum dry film thickness of six (6) mils. Intermediate coat shall be beige or similar in color.

C. Finish Coats

Coats shall be Tnemec Series L140F Pota-Pox Plus, ICI Devoe Bar-Rust 233H, or approved equal; it shall consist of one coat applied to a minimum dry film thickness of six (6) mils. Finish coat and all subsequent coats or touch-up shall be white in color.

D. Total Thickness

The total dry film thickness shall be a minimum of fifteen (15) mils.

E. Application Requirements

At least 72 hours shall elapse between coats. Materials shall be stirred thoroughly with a slow speed power mixer until a smooth uniform consistency is obtained. Compound shall be mixed in exact proportions specified by manufacturer. The material shall not be thinned except possibly in cold weather, and then only in strict accordance with the manufacturer's written recommendations. Coatings shall not be applied when the surface temperature of the area to be coated is below 60° F or above 100° F.

F. Dry Film Thickness Verification

The District will measure the thickness of each coating to ensure that the specified dry film thickness has been obtained and shall take final measurements 7 days after application of the finish coat.

G. Drying Time

A minimum of 14 days shall elapse between application of the finish coat and filling the tank with water for disinfection, filling, testing, and sampling.

H. Color

Each coat shall be a different color than the preceding coat. The final coat shall be white. All coats shall be NSF Standard 61 approved.

14. Disinfection, Filling, Testing, and Sampling

Contractor, in the presence of the Inspector, shall clean and disinfect the reservoir as follows:

A. Contractor shall notify the District when interior coating has cured, 14 days minimum, or longer as determined by Contractor.

B. Contractor shall pressure spray-flush all interior surfaces including top of dollar plate and interior of vents 2 times using construction water. If necessary, Contractor shall use a combination of brushing and pressure spray-flushing to clean interior of the reservoir. Capacity of pressure spray pump shall be such that sufficient volume, as approved by the District, be able to extend a minimum of 5 feet beyond the highest surface required to be cleaned. After the reservoir is clean, Contractor shall drain construction water and clean reservoir floor of all remaining silt and debris.

C. The District will place approximately 6 inches of potable or chlorinated water in the bottom of reservoir and Contractor shall add sufficient chlorine to produce a

chlorine concentration of 100 ppm. Contractor shall then pressure spray-flush all interior surfaces 4 times using the chlorinated water. Contractor shall maintain the chlorinated water inside the reservoir at 50 ppm chlorine residual for 24 hours minimum. The District will thereafter drain the reservoir after verification of chlorine residual. If the 50 ppm minimum chlorine residual is not maintained, Contractor shall repeat the disinfection procedure.

D. Contractor shall replace all manhole gaskets with new District approved gaskets.

E. The District will fill reservoir to full capacity and leave it full for 5 days minimum. The District will inspect reservoir during said week for apparent leaks.

F. After reservoir has been filled for 24 hours, the District will take water samples for bacteriological analysis. After reservoir has been filled for 5 days, the District will take water samples for volatile organic analyses. Results from said analyses will be sent to the State Water Resources Control Board Division of Drinking Water (DDW) for their review and approval. If the results are not approved, the District will drain the reservoir and Contractor shall continue to force ventilate same in accordance with Part 8.D herein until he again determines the coating to be cured. Contractor will be charged for all subsequent water to rechlorinate and refill reservoir and for all subsequent bacteriological and volatile organic analyses until the results of said analyses are approved by the DDW.

G. The District will provide a reasonable quantity of water at no charge to Contractor for construction, pressure flushing, chlorination, and filling reservoir; however, water for pressure flushing, chlorination, and filling will be limited to one event each. The District will charge for any additional events.

15. Requirements Regarding Worksite and Vicinity

A. Contractor shall not perform work outside work site limits and shall not leave said work site except to enter or leave the area via the access road.

B. Contractor is obligated to keep visual impact of the Work site to a minimum, and to prevent damage to all existing structures, private property, and residences in vicinity of Work site. Contractor shall restore all areas altered by construction to pre-job conditions and shall meet the requirements of the District. Such areas shall include, but shall not be limited to, areas used for travel, parking, and storage of vehicles, equipment and materials.

C. Contractor shall utilize existing roads in such a manner as to not damage existing roads or adjacent properties. Any damage to same shall be repaired by Contractor to the satisfaction of the District and to any agency having jurisdiction over roadway.

D. Work shall be performed to prevent fires and air pollution in accordance with the General Requirements and Special Conditions. Said prevention shall apply to

travel on access roads as well as on the work sites. All equipment shall be provided with spark arrestors and readily accessible fire extinguishers shall be kept on site.

E. Contractor shall limit construction noise to a maximum continuous level of 65 dBA, as measured at the reservoir site's property line between the hours of 7:00 AM to 5:00 PM, Monday through Friday. This maximum continuous level shall decrease to 55 dBA on holidays and all other times, if work during those times is approved by the District. Contractor shall be able to demonstrate compliance with noise limits by taking and recording noise measurements when requested to do so by the District.

Contractor may use any District approved method to limit construction noise including the placement of acoustic skirts or curtains around the equipment and/or work area, placement of a barrier wall around the site, and/or providing high performance mufflers for the equipment engines.

F. Contractor shall prevent all dust or sand from blowing off the reservoir site. Contractor may use any District approved method to prevent said dust or sand from blowing offsite including the placement of temporary shield, screens, or covers, proper containment, and the use of self-contained sand blasting equipment.

G. Contractor shall prevent overspray from blowing off the reservoir site during coating operation. Contractor may use any District approved overspray protection or shall limit coating the reservoir to periods when wind speeds are minimal.

H. The District has the right at any time to analyze noise, blowing dust, overspray, or any other applicable condition, and require preventive measures to be implemented by the Contractor prior to proceeding.

If a complaint is received, the Contractor shall cease operations immediately, inform the District of the complaint, take corrective actions, and receive permission from the District in order to proceed. All corrective actions shall be provided by the Contractor at no additional cost to the District. The Contractor shall immediately repair any damages resulting from said complaint at no cost to the District. Any costs incurred by the District for said complaints shall be reimbursed by the Contractor.

16. Sandblast Sand and Removed Coating

All sandblast sand, removed coating, and any other residual debris shall be collected, removed from the site, and disposed of at an approved legal disposal site. Said material shall be collected and directly moved from site. Said materials shall not be stockpiled outside the reservoir prior to removal and disposal.

17. Cleanup

During all coating operations, site shall be kept clean and free of all empty buckets, paint cans, trash, and any other material which gives the site an untidy appearance. Contractor shall provide a trash dumpster, shall clean site daily, and place all said materials in dumpster. Said dumpster shall be emptied a minimum of once a week. Upon completion of the work, all staging, scaffolding, containers, rags, pieces of enamel, and all materials and equipment used in the performance of the work shall be removed from the site. All damage to surfaces resulting from the work shall be cleaned, repaired, or refinished to the complete satisfaction of the District.

18. Additional Material Supplied to the District

Following completion of work, Contractor shall supply the District with a minimum of one gallon of the finish coat utilized in coating the reservoir interior. Life span of material delivered to the District shall be a minimum of one year at the time of delivery and color of material shall be identical to that utilized in coating the reservoir.

END OF SECTION
(FOLLOWING SAMPLE LETTER ATTACHED)

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SAMPLE GUARANTEE/WARRANTY LETTER

[INSERT COMPANY NAME]

License # _____

EXTENDED WARRANTY FORM

[INSERT COMPANY NAME], known herein as "CONTRACTOR", hereby unconditionally guarantees that the Work performed for and on:

CABAZON WATER DISTRICT (OWNER)
TANK NO. 1 INTERIOR RECOATING
[INSERT CONTRACT/AGREEMENT #]

is in accordance with the requirements of the Contract therefore and further guarantees the work of the Contract to be and remain free of defects in workmanship and materials for a period of three (3) years from and after the recordation of the Notice of Completion of the Project and completion of all Contract obligations by the CONTRACTOR, including formal acceptance of the entire Project by OWNER. The CONTRACTOR specifically waives any right to claim or rely on the statutory definition of completion set forth in Civil Code section 3086. The CONTRACTOR specifically acknowledges and agrees that completion shall mean the CONTRACTOR's complete performance of all Work required by the Contract Documents, amendments, change orders, construction change directives and punch lists, and the OWNER's formal acceptance of the entire Project, without regard to prior occupancy, substantial completion doctrine, beneficial occupancy, or otherwise. The CONTRACTOR hereby agrees to repair or replace any and all work, together with any adjacent Work which may have been damaged or displaced in so doing, that is not in accordance with the requirements of the Contract or that may be defective in its workmanship or materials within the guarantee period specified, without any expense whatsoever to the OWNER, ordinary wear and tear and unusual abuse and neglect only excepted.

The CONTRACTOR further agrees that within ten (10) calendar days after being notified in writing by the OWNER of any work not in accordance with the requirements of the contract or any defects in the work, it will commence and prosecute with due diligence all work necessary to fulfill the terms of this guarantee, and to complete the work within a period of time stipulated in writing. In the event it fails to so comply, CONTRACTOR does hereby authorize the OWNER to proceed to have such Work done at the CONTRACTOR's expense and it will pay the cost thereof upon demand. The OWNER shall be entitled to all costs, including reasonable attorneys' fees, necessarily incurred upon the CONTRACTOR's refusal to pay the above costs.

The guarantee period for corrected defective work shall be ONE (1) year from the date of the corrective work, or three (3) years from the date of project acceptance by the OWNER, whichever is longer. The guarantee set forth herein is not intended by the parties, nor shall it be construed, as in any way limiting or reducing the OWNER's rights to enforce all terms of the Contract referenced hereinabove or the time for enforcement thereof. This guarantee is provided in addition to, and not in lieu of, the OWNER's rights on such contract.

CONTRACTOR'S SIGNATURE: _____

TITLE: _____
PRINT NAME: _____
EXECUTED: _____

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