CONTRACT DOCUMENTS

VOLUME 2 OF 3

FOR

EXIT 29 WATER PRODUCTION FACILITY & ELEVATED STORAGE TANK

PREPARED FOR:

BRUNSWICK – GLYNN JOINT WATER & SEWER COMMISSION

J – 30998.0000

NOVEMBER 2024

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SUMMARY OF WORK

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Contract Description.

B. Work required by Contract.

C. Contract Drawings.

D. Contract Technical Specifications.

1.2 CONTRACT DESCRIPTION

A. Contract Type: Lump Sum

1.3 WORK REQUIRED

A. Consists of Contractor furnishing all labor, materials, tools, equipment and incidentals to complete the Work generally described below:

1. The contractor shall supply all erosion and sediment control necessary for work.

2. Contractor shall perform all survey work necessary for this work.

3. Contractor shall verify all existing site conditions before construction.

4. Contractor shall protect all existing utilities and services to remain as shown and specified.

5. Contractor shall provide all labor, materials, and appurtenances to:

a. Remove all site piping as shown and specified.
b. Demolish all existing materials as identified in the demolition plan.
c. Clean, sand blast, and paint all well appurtenances to remain. Perform well modifications as necessary to complete contract as shown and specified. If well lacks access port or vent as shown on plans, Contractor shall install. Contractor shall provide new concrete supports as shown. Contractor shall furnish and install all new piping and equipment as shown and specified from pump-mating-flange. Contractor shall furnish and install new pressure transducer within well as shown and specified.
d. Perform all grading as shown and specified.
e. Perform all concrete work as shown and specified, including, but not necessarily limited to, thrust restraints, foundations, pads, and walkways.
f. Furnish and install all site piping tie proposed water source into

existing municipal system.

g. Construct pump building and furnish and install (2) pumps, motors, shut off switches, valves, electrical, controls, all associated piping as shown and specified.

h. Furnish and install all chemical treatment equipment for Phosphate and Chlorine as shown and specified.

i. Furnish and install 200,000-gallon pre-stressed concrete water tank as shown and specified. This work shall include but is not necessarily limited to furnishing and installing all pipe appurtenances, all valves, all sensors, all safety ladders and associated safety equipment, and all aerator accessories as shown, specified, and required by manufacturer.

j. Furnish and install 500,000-gallon elevated water tank as shown and specified. This work shall include but is not necessarily limited to furnishing and installing all pipe appurtenances, all valves, all sensors, all safety ladders and associated safety equipment, and all aerator accessories as shown, specified, and required by manufacturer.

   i. Two alternate bids have been included to supply a 500,000-gallon multi-leg elevated water storage tank, and a 500,000-gallon pedosphere elevated water storage tank. All other aspects of the project will remain the same. Only one of the elevated water storage tanks will be awarded.

k. Furnish and install new fence and gate as shown and specified.

l. Perform all electrical and HVAC work to ensure the proposed facility is safe and completely operational according to drawings and specifications.

m. Furnish and install all equipment necessary to tie new sensors, signals, and alarms into new and existing system SCADA software.

6. Perform all site restoration to bring site to acceptable conditions for completion of work.

7. Contractor shall legally dispose of all removed materials off site, except for those identified to be salvaged by Owner.

B. All work shall be performed as shown on the Drawings and as described in the Contract Documents and Technical Specifications.

C. All work shall comply with standards described by the Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926, Subpart P, latest revision.

1.4 CONTRACT DRAWINGS

Sheet	Description	Job No.
CS	COVER SHEET	30998.0000
G1.1	GENERAL NOTES	30998.0000
C1.0	EXISTING CONDITIONS	30998.0000
C1.1A	DEMO PLAN	30998.0000
C1.1B	DEMO PLAN	30998.0000
C1.2	TREATMENT FACILITY SITE STAKING PLAN	30998.0000
C1.3	SITE PIPING PLAN	30998.0000

Sheet	Description	Job No.
C1.4	GRADING & DRAINAGE	30998.0000
C1.5	ELEVATED TANK SITE STAKING PLAN	30998.0000
C1.6	SITE PIPING PLAN	30998.0000
C1.7	GRADING & DRAINAGE	30998.0000
C1.8	GRADING & DRAINAGE	30998.0000
C2.1	PROCESS FLOW DIAGRAM	30998.0000
C2.2	WATER WELL PAN & SECTION	30998.0000
C2.3	GROUND STORAGE TANK PLAN & SECTION	30998.0000
C2.4	GROUND STORAGE TANK SECTION & DETAILS	30998.0000
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C2.6	GROUND STORAGE TANK DETAILS	30998.0000
C2.7	GROUND STORAGE TANK AERATOR	30998.0000
C2.8	PUMP HOUSE PLAN & DETAILS	30998.0000
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1.5 CONTRACT TECHNICAL SPECIFICATIONS

SECTION NO.	TITLE
02 30 00	Subsurface Investigation
02 41 13	Selective Demolition
03 00 00	Site Concrete
03 10 00	Concrete Forming and Accessories
03 20 00	Concrete Reinforcing
03 30 00	Cast–In–Place Concrete
04 22 00	Concrete Unit Masonry
05 50 00	Metal Fabrication
06 10 00	Rough Carpentry
06 16 00	Sheathing
06 17 53	Shop-Fabricated Wood Trusses
09 90 00	Painting
09 96 00	Coating System for Water Storage Tanks
31 00 00	Earthwork
31 10 00	Site Clearing
31 25 00	Soil Erosion Control
31 25 00GA	Erosion, Sedimentation, and Pollution Control (GA)
31 37 00	Rip–Rap
31 63 16	Auger Cast Grout Piles
32 00 00	Surface Restoration
32 11 23	Aggregate Base Course
32 12 16GA	Asphalt Paving
32 31 13	Chain Link Fences and Gates
32 90 00	Landscaping
33 05 01.20	Fusible Polyvinylchloride Pipe for Installation by Horizontal Directional Drilling (HDD)
33 05 23.13	Utility Horizontal Directional Drilling
33 05 23.14	Horizontal Directional Drilling (HDD) Inadvertent Release Control Plan (IRCP)

33 10 00	Water Distribution System
33 11 00	Well Head Piping
33 12 23	Distribution Pump Station
33 16 13	Composite Elevated Water Storage Tank
33 16 13.13	Elevated Steel Water Storage Tank
33 16 13.16	Prestressed Concrete Ground Water Storage Tank
33 40 00	Storm Drainage
35 01 40.92	Water Management Services

1.6 WORK SCHEDULE

A. Construct Work in phases to accommodate Owner's requirements during the construction period, coordinate construction schedule and operations with Owner and Engineer.

B. All time limits for Substantial Completion and completion and readiness for final payment as stated in the Contract Documents are of essence to the Contract.

C. The Work will be substantially completed within 270 days after the date when the Contract Times commence to run and completed and ready for final payment within 300 days after the date when the Contract Times commence to run. Contractor will be entitled to an equitable adjustment in Contract Times if the Work is delayed by "abnormal weather conditions".

D. If "abnormal weather conditions" are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.

E. The existence of abnormal weather conditions will be determined on a month–by–month basis in accordance with the following:

F. Every workday on which one or more of the following conditions exist will be considered a "bad weather day":
    a. Total precipitation (as rain equivalent) occurring between 7:00 p.m. on the preceding day (regardless of whether such preceding day is a workday) through 7:00 p.m. on the workday in question equals or exceeds 0.5 inches of precipitation (as rain equivalent, based on the snow/rain conversion indicated in the table entitled Foreseeable Bad Weather Days; such table is hereby incorporated in this SC–4.05.C by reference.
    b. Determination of actual bad weather days during performance of the Work will be based on the weather records measured and recorded by National Oceanic and Atmospheric Administration (NOAA) weather monitoring station at The Savannah/Hilton Head Airport.
    c. Contractor shall anticipate the number of foreseeable bad weather days per month indicated in the table in Exhibit A —Foreseeable Bad Weather Days.

d. In each month, every bad weather day exceeding the number of foreseeable bad weather days established in the table in Exhibit A — Foreseeable Bad Weather Days will be considered as "abnormal weather conditions." The existence of abnormal weather conditions will not relieve Contractor of the obligation to demonstrate and document that delays caused by abnormal weather are specific to the planned work activities or that such activities thus delayed were on Contractor's then–current Progress Schedule's critical path for the Project. At the end of each month the contractor shall submit to the Owner's Representative and Engineer documentation of the total abnormal weather days along with data/documentation to substantiate precipitation (e.g. rain gauge data, etc.) as well as an updated Project schedule showing impact, if any to the Project's critical path. Contractor shall also be responsible for including in the monthly schedule submittal how the Project's schedule and critical path has been improved during month's where the number of abnormal weather days are less than those presented in the Exhibit B. Only the documented and substantiated net effect of increase/decrease in total abnormal weather days to the Project's critical path over the entire construction process shall be considered in potential Contract Time adjustment.

EXHIBIT A - Foreseeable Bad Weather Days.

Month	Number of Foreseeable Bad Weather Days in Month Based on Precipitation as Rain Equivalent (inches) (1)	Ambient Outdoor Air Temperature (degrees F)	
		Number of Foreseeable Bad Weather Days in Month Based on Low Temperature (at 11:00 a.m.)	Number of Foreseeable Bad Weather Days in Month Based on High Temperature (at 3:00 p.m.)
January	4		
February	8		
March	4		
April	2		
May	2		
June	5		
July	6		
August	4		
September	4		
October	3		
November	2		
December	3		

Notes:

1. Two inches of sleet equal one inch of rain. Five inches of wet, heavy snow equal one inch of rain. Fifteen inches of "dry" powder snow equals one inch of rain.

G. Liquidated Damages. OWNER and CONTRACTOR recognize time is of the essence for this Agreement and OWNER will suffer financial loss if the Work is not completed within the times specified in the "Agreement Between Owner and Contractor for Construction Contract", plus any extensions thereof allowed in accordance with

Article 16 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by OWNER if the Work is not substantially complete on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree to liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay OWNER One Thousand dollars ($ 1,000.00) for each day expiring after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR, shall pay OWNER One Thousand dollars ($ 1,000.00) for each day expiring after the time specified in paragraph 3.1 for completion and readiness for final payment.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

Not used

END OF SECTION

INDEX TO

SECTION 01 22 00

UNIT PRICES

SECTION 01 22 00

UNIT PRICES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Measurement and payment criteria applicable to the Work performed based on the percentage of work completed under a lump sum price payment method.

1.2 AUTHORITY

A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

B. Take all measurements and compute quantities. The Engineer will verify measurements and quantities.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.3 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Owner determine payment.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.4 MEASUREMENT OF QUANTITIES

A. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

B. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

C. Measurement by Area: Measured by square dimension using mean length and width or radius.

D. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

E. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

A. SECTION 02 30 00 – SUBSURFACE INVESTIGATION

a. There will be no separate measurement or payment made for subsurface investigation. Payment for verifying subsurface conditions shall be considered a subsidiary obligation of the contract.

B. SECTION 02 41 13 – SELECTIVE SITE DEMOLITION

a. There will be no separate measurement for selective demolition. Payment will be included in the item to which it pertains. Payment will include equipment, labor, materials, protection, clean–up, disposal, and all work necessary to complete the selective demolition shown on the construction drawings.

C. SECTION 03 00 00 – SITE CONCRETE

a. Site Concrete – All concrete work will be considered a part of the structure in which it is used, and no direct measurement or payment will be made.

b. Site concrete pavements, sidewalks - regardless of thickness - shall be paid for under the lump sum "Clearing, Erosion Control, Site Work, & Landscaping" item for that division.

c. Remove and Replace Concrete – Concrete pavement and sidewalk, regardless of thickness, shall be measured and paid for by the square yard of finished surface complete in plans. Surface course and subsurface courses shall be restored to match the existing concrete.

d. Payment shall constitute full compensation for furnishing all materials, equipment, tools, forms, inserts, and all labor and incidentals needed to complete the work required by these specifications. No payment will be made for any material wasted, used for the convenience of the Contractor, unused or rejected.

e. No separate payment shall be made for additional concrete included in this Section. All costs and charges in connection herein shall be included and reflected in the payment for the particular item of work to which it pertains. Pre-cast structures shall be paid for under the lump sum "Clearing, Erosion Control, Site Work, & Landscaping" item for that division, unless explicitly mentioned elsewhere.

D. SECTION 03 10 00 – CONCRETE FORMING AND ACCESSORIES

a. No separate measurement will be made for concrete forming. Payment will be included in the item to which it pertains.

E. SECTION 03 20 00 - CONCRETE REINFORCING

a. No separate measurement will be made for site concrete reinforcing. Payment will be included in the item to which it pertains.

F. SECTION 03 30 00 – CAST–IN–PLACE CONCRETE

a. All concrete work will be considered a part of the structure in which it is used and no direct measurement or payment will be made.

G. SECTION 04 22 00 – CONCRETE UNIT MASONRY

a. All construction materials furnished and installed within the bounds of the water treatment building shall fall under the lump sum payment item "1,200 SF Well Treatment & Pump/Control Building Structure - Complete". This includes all materials integral to the building itself. For example, roofing, wall materials, floor materials. It also includes safety features and appurtenances and all other items pertinent to the overall function of the building. Pumps and piping, electrical work and materials, chemical equipment, and all other items associated with the building are also included in this lump sum pay item. This item shall include any and all utility reimbursements associated with pervious services and services to the new facility. All utilities within 5' of the foundation shall be included in this item as well as coordinating with the electrical utility to provide the service. This item shall include any building permits and fees associated with such for the proposed facility.

H. SECTION 05 50 00 – METAL FABRICATIONS

a. No separate measurement will be made for metal fabrications. Payment will be included in the item to which it pertains.

I. SECTION 06 10 00 – ROUGH CARPENTRY

a. No separate measurement will be made for rough carpentry. Payment will be included in the item to which it pertains.

J. SECTION 06 16 00 – SHEATHING

a. No separate measurement will be made for sheathing. Payment will be included in the item to which it pertains.

K. SECTION 06 17 53 – SHOP–FABRICATED WOOD TRUSSES

a. No separate measurement will be made for wood trusses. Payment will be included in the item to which it pertains.

L. SECTION 09 90 00 – PAINTING

a. No separate payment will be made for painting. All costs and charges in connection therewith shall be included and reflected in the payment for the particular item of work to which it pertains.

M. SECTION 09 96 00 – COATING SYSTEM FOR WATER STORAGE TANKS

a. Payment will be included in the lump sum price for the complete tank associated with each painting and coating system. See Sections 33 16 13 and 33 16 13.13 for elevated tank painting measurement and payment. Payment shall be made for cleaning, surface preparation, application, design and application of Owner selected color schemes, lettering, up to two logos, touch–up, and incidentals included in the coating system shall be made under this same price. Painting for the ground storage tank such shall be included in the item "200,000 Gallon Ground Water Storage Tank."

N. SECTION 26 00 00 – ELECTRICAL GENERAL

a. No separate measurement or payment shall be made for electrical work in Division I. SCADA and electrical work for the ground storage tank, and the treatment/control building shall be paid for under the respective items. SCADA and electrical for any and all meters, BFVs, controls, sumps, etcetera, associated with site piping shall be paid for under "1,200 SF Well Treatment & Pump/Control Building Structure – Complete."

b. All electrical work related to division II shall be paid under Elevated Water Storage Tank Electrical – Complete. Startup shall be included in this item as well.

O. SECTION 26 32 13 – ENGINE GENERATORS

a. No separate measurement or payment shall be made for engine generators. Any and all labor, materials, and incidentals, including slab for generator shall be paid for under "1,200 SF Well Treatment & Pump/Control Building Structure – Complete."

P. SECTION 31 00 00 – EARTHWORK

a. The following items shall be paid under the lump sum bid item titled "Clearing, Erosion Control, Site Work, & Landscaping." - All grading to subgrades, construction of ditches, dressing of disturbed areas, removing and replacing topsoil, excavating, backfilling and compacting to required elevations, testing, staking, and construction supervision. All site restoration to bring site to quality of existing site or better that is not exclusively included in other items shall be included in the lump sum payment of "Clearing, Erosion Control, Site Work, & Landscaping."

b. Stone Bedding and Sand Backfill – No separate measurement or payment shall be made for stone bedding and sand backfill. Stone bedding shall be No. 57 stone as defined in the Specifications; no recycled concrete or other substitute materials shall be allowed. Sand backfill shall be select suitable material as defined in this Section. The cost for stone bedding and sand backfill shall be included in the overall cost of the pipe or structure for each associated pay item. Payment for the installation of water-line bedding or associated structures shall be as shown in details. Where the Engineer determines that additional stone or sand beyond that shown on the detail

is required, it shall be paid for at the cost of furnishing and placing the select backfill and stone bedding. Because these items are of an indeterminate quantity, the bid form includes a nominal quantity in cubic yards (CY) of stone bedding and sand backfill in order to establish a unit price for these items. No payment for stone bedding or sand backfill will be made during construction without approval of location, quantity, and overall price by Engineer and Owner.

c. Unsuitable Material – Payment for this item will not be made without written authorization from Owner and Engineer. Because this item is of an indeterminate quantity, the bid form includes a nominal quantity in cubic yards (CY) of unsuitable material in order to establish a unit price for these items. Payment will be made on a contract unit price for each cubic yard removed and replaced with suitable material. Payment will include excavation and disposal of unsuitable material.

d. Borrow – No separate measurement or payment shall be made for the removal or disposal of unsuitable material and replacement of suitable borrow material. The cost for backfilling with suitable borrow material including select material as required for pavement subgrade, fill, and backfill shall be included in the unit price for the item to which it pertains.

e. Earthwork – All earthwork associated with the installation of headwalls, stie piping, pump station, access road, tank foundation, rip–rap, etc. shall not be measured for direct payment. Payment for the earthwork shall be included in the item to which it pertains.

f. Dewatering – Measurement and payment will be made at the contract lump sum "Clearing, Erosion Control, Site Work, & Landscaping." The Contractor shall remove water from the site and shall lower the groundwater level as necessary to complete the excavations to the required depths and so that all required work can be accomplished in the dry. Dewatering shall be accomplished in a manner so as to cause no impact to adjacent buildings or structures. The Contractor shall do such well construction, well pointing, sheeting, ditching, and pumping, and shall construct necessary drains, channels, and sumps to keep his excavations and new structures clear of groundwater, stormwater, or sewage and to keep his construction areas dry during the progress of the work.

Adequate measures and protection shall be provided by the Contractor to protect his work from damage from uplift due to groundwater, stormwater, or flood water. Any damages that may result shall be the Contractor's responsibility. The Contractor shall accept all responsibility for damage to the work of his Contract because of floods and water pressures and other water damages and shall accept all risks of floods and other events that may occur. All water discharged by pumping operations shall be discharged so as not to interfere with work under this contract or with existing structures and operations. Water from dewatering operations shall be conveyed to the existing drainage features, using piping and pumping facilities provided by the Contractor.

Route of dewatering pipe shall be subject to the Engineer and Owner's review. Discharge facilities and water quality shall comply with applicable regulation of State and Federal agencies. Any and all required water quality treatment from the dewatering activities and prior to discharge is responsibility of the Contractor.

Dewatering operations shall be uninterrupted and continuous during the course of the work so as not to endanger any construction in place or to present a hazard to workmen in and around the site. The Contractor shall take all measures necessary, including but not limited to, standby equipment and constant attendance to ensure that the dewatering system remains operational and effective through the period of time that it is required. No water shall be allowed to run over any uncompleted portions of the work. No units of the work shall be constructed under water. The cost of dewatering shall be included in the price bid for the item of work for which it is required.

g. All payment and measurement for other items shall be included for the item to which it pertains.

Q. SECTION 31 10 00 – SITE CLEARING

a. Site Clearing, grubbing and other items to be removed will be included in the lump sum price "Clearing, Erosion Control, Site Work, & Landscaping" item for that division. Includes clearing site, removing vegetation, protecting vegetation to remain, trimming trees removing stumps, loading and removing waste materials. The removal and disposal of trees identified in the demolition plans shall be included in this pay item.

R. SECTION 31 25 00 – SOIL EROSION CONTROL

a. No unit measurements will be made for soil erosion control. Payment will be made at the lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" as shown on the bid proposal. The cost of soil erosion control shall include all equipment, labor and materials necessary to comply with the State Georgia Erosion and Sediment Control Program. Contractor must incorporate the cost of complying with federal, state, and local agencies in the price for the job.

b. A contingency item titled " Removal and Replacement of Erosion and Sediment Control in Case of a Named Severe Weather Event " is included for the removal and replacement of Erosion and Sediment Controls in the case of a named severe weather event, based on the linear feet of controls in place.

S. SECTION 31 25 00GA – EROSION, SEDIMENTATION, AND POLLUTION CONTROL (GA)

a. See above – Section 31 25 00

T. SECTION 31 37 00 – RIP–RAP

a. Rip-Rap: Payment will be made at the lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" as shown on the bid form. The lump sum price shall include all costs and labor to furnish and install rip-rap as shown and described in the plans.

U. SECTION 31 62 13 – CONCRETE PILES

a. No measurement or payment will be made for concrete piles. The cost of verifying soil conditions, selecting a foundation design, set up, application of test loads, testing equipment, monitoring, reporting, and incidentals associated with test piles shall be included in the contract lump sum price for the selected elevated water storage tank design alternative.

V. SECTION 31 63 16 – AUGER CAST GROUT PILES

a. No measurement or payment will be made for concrete piles. The cost of verifying soil conditions, selecting a foundation design, set up, application of test loads, testing equipment, monitoring, reporting, and incidentals associated with test piles shall be included in the contract lump sum price for the selected elevated water storage tank design alternative.

W. SECTION 32 00 00 – SURFACE RESTORATION

a. Protection of structures for all divisions shall be paid for under "Clearing, Erosion Control, Site Work, & Landscaping" when objects to remain shall be avoided except where explicitly mentioned elsewhere. Protection shall include all materials, equipment, labor, and cleanup required to protect existing structures to remain.

b. There will be no measurement for Traffic Control. Payment will be made at the contract lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" Payment will include all planning, equipment, labor, materials, protection, clean-up, disposal, and all work necessary to complete the traffic control necessary to complete the work.

c. No measurement or payment will be made for thermoplastic markings. The replacement of any thermoplastic markings and warnings as disturbed by this work shall be paid for under the lump sum "Clearing, Erosion Control, Site Work, & Landscaping".

X. SECTION 32 11 23 – AGGREGATE BASE COURSE

a. Aggregate Base Course: Payment will be made under the unit or lump sum unit price for the respective material that is being laid that requires aggregate base course. Additionally, the payment will include all material, labor, clean-up, and incidentals to make the installation.

b. Prime Coat: Bituminous prime coat will not be measured for separate payment. All costs connected with applying prime coat shall be included in the unit price bid for the respective material that is being laid that requires prime coat.

c. Access Road Route Construction, & Tree Protection: Payment will be made at the Contract lump sum price for "Access Road Route Construction, & Tree Protection". Item will include all necessary removal and disposal of unsuitable material, fill material, installation, geogrid, grading and compaction of the road and ditches. The "Access Road" section shall be per Geotechnical Report recommendation. Additionally, the payment will include all material, labor, clean-up, and incidentals to make the installation.

Payment shall include the labor and planning required for submitting an Access Road Routing and Demolition Plan inclusive of proposed clearing and any grading. Contractor to minimize tree removal to the greatest extent practicable, while permitting the flow of traffic for construction vehicles required to perform Division II work. Access Road Routing and Demolition Plan shall indicate the trees to be preserved in addition to those removed. The contractor may employ an arborist to assess the viability of trees to remain at no additional cost to the Owner.

Y. SECTION 32 12 16GA – ASPHALT PAVING

a. Remove and Replace Asphalt: Will be paid for at the contract unit price per square yard, regardless of thickness of existing asphalt paving or type & thickness of underlying base material. Payment will include all include all aggregate base course, prime coat, binder courses, surface courses, tack coats, cleaning, placing, compacting, testing, and all other appurtenances related to the replacement of asphalt concrete pavement per the municipality's standards and specifications.

Z. SECTION 32 31 13 – CHAIN LINK FENCES AND GATES

a. Fencing and Gates: Payment for chain–link fence, complete, will be included in the lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" for the respective division that calls for fencing and gates.

AA. SECTION 32 90 00 – LANDSCAPING

a. Payment for grassing will be made at contract lump sum price for the item "Clearing, Erosion Control, Site Work, & Landscaping". Such payment shall constitute full compensation for furnishing and placing seed, sprig, topsoil, fertilizer, sod, mulch, or any combination of such where directed, where ground has been disturbed, where paving, stone, or other surface restoration is not indicated to take place, and protecting and maintaining seed and sod in all graded and distributed areas.

b. When the season or stage of project is such that results of grassing work cannot be determined, conditional acceptance will be made on work completed. When conditional acceptance is made for items of work covered. Contractor shall be entitled to 50% of bid price for the actual work placed and shall receive remaining 50% of bid price when final acceptance is made. Conditional acceptance shall not apply to the remaining items of work, and full bid price payment shall be made when

work is acceptably placed and completed in accordance with specification.

BB. SECTION 33 05 01.20 – FUSIBLE POLYVINYLCHLORIDE PIPE FOR INSTALLATION BY HORIZONTAL DIRECTIONAL DRILLING (HDD)

a. Horizontal Directional Drilling – Payment shall be made at the contract unit price for each size and type of pipe installed. Payment will include preparation of installation plan, mobilization, fusing of pipe, necessary pipe supporting means during fusion process, necessary water supply during drilling process, other equipment, accessories, excavation, dewatering, mucking, borrow, handling of drilling mud, set–up, preparation of IRCP, drilling operations, FPVC/HDPE to PVC connection couplings, testing, and any other items necessary to complete successful bores with satisfactory tests completed before payment is made. Payment will also include labor, equipment, handling, security, storage, installation, clean up, restoration, and all other incidentals. Payment will only be made for the linear foot price of piping installed; no additional payment will be made for any potential excess FPVC. Measurement for payment will be based on the final in–place cut lengths of fusible pipe on a linear foot basis in a horizontal plane. There shall be no separate measurement or payment for additional drilling or pipe lengths needed to start and terminate the borings or for abandoned bores.

CC. SECTION 33 05 23.13 – UTILITY HORIZONTAL DIRECTIONAL DRILLING

a. See above – Section 33 05 01.20

DD. SECTION 33 05 23.14 – HORIZONTAL DIRECTIONAL DRILLING (HDD) INADVERTENT RELEASE CONTROL PLAN (IRCP)

a. See above – Section 33 05 01.20

EE. SECTION 33 10 00 – WATER DISTRIBUTION SYSTEM

a. Measurement –

1. The length of mains and branch lines to be paid for will be determined by measurement along the centerline of the various sizes and types of pipes actually furnished and installed, from the center of fitting, and from the center of the main to the end of the branch connection. No deduction will be made for the space occupied by valves and fittings.

2. Lump Sum items to not be measured in units but to be paid out under the lump sum required to furnish and install all materials under said item.

3. Per each items to be measured for the entirety of that unit that was installed.

b. Payment –

1. Pipe – Payment will be made at the contract unit price per linear foot for the various types and sizes of pipe that are actually placed as shown on the plans, or as directed by the Engineer. All costs for piping shall be included and reflected in the payment for the particular item of work to which it pertains. Payment will include the pipe, polyethylene tube encasement, coatings, excavation, removal and disposal of unsuitable material, installation, geotextile, bedding, electronic markers, joint restraints, mucking, dewatering, backfilling with suitable material, compaction, flushing, testing, disinfecting, grassing, grading, borrow material, tracing wire, warning tape, labor, equipment, materials, and all other incidentals to the installation of the pipes shall be considered as subsidiary obligations of the Contractor for completion of the line in place. The length of mains and branch lines to be paid for will be determined by measurement along the centerline of the various sizes and types of pipe actually furnished and installed, from the center of fitting, and from the center of the main to the end of the branch connection. No deduction will be made for the space occupied by valves and fittings. Satisfactory tests must be completed before payment is made.

2. Payment will be made all interior pumps and piping for Division I at the contract lump sum price "1,200 SF Well Treatment & Pump/Control Building Structure – Complete." The work described by this item shall be inclusive of all materials and labor required to install any and all water piping associated with distribution within the footprint of the building. This includes the water service line, all hose bibs, and the emergency shower. This is inclusive of all drainage pipe within the footprint of the building including the sump pump. The pay line of this item will be to 5 feet outside of the perimeter of the building. This item is inclusive of all chemical feed equipment within 5' of the pump building footprint. It shall be inclusive of all analyzers, chlorination supplies, sensors, pumps, alarms, and all other listed equipment for phosphate and chlorine dosing. The SCADA programming associated with chemical feeds shall also be included in this pay item. Startup shall be included in this item as well.

3. Site Piping – Payment will be made at the contract lump sum price. The work described by this item shall be inclusive of all materials and labor required to install any and all water and drainage piping associated with distribution outside of the 5–foot footprint of the building & groundwater storage tank, and elevated water storage tank for Division I and Division II respectively, per the bid form. This work is inclusive of the tie–in point to the distribution system on the well treatment site. This item includes the water service line up to 5 feet outside of the footprint of the proposed building & tank(s) including the meter, RPZ, and yard hydrant. This is inclusive of all drainage pipe outside of the 5 foot footprint of the building. This item includes any and all chemical feed lines, analyzing lines, all drainage connections, the flowmeters, meters, and BFVs with associated manholes and vaults, flexible joints and valves to the

proposed groundwater storage tank. The pay line to well piping for this item will be located 5' from the well slab perimeter.

Site Piping for Division II shall include the Altitude Valve Assembly on Slab – Payment will be made at the contract lump sum price for site piping. The work described by this item shall be inclusive of all materials and labor required to install the altitude valve, check valve, the bypass connection, valves, associated concrete structures, accessories, testing, sampling, drainage, and connections to the newly proposed elevated tank site piping. Electrical work and controls associated with the altitude valve shall be paid for under "Elevated Water Storage Tank Electrical – Complete"

4. Fittings – Payment will be made at the contract unit price for each size and type of ductile iron restrained fitting installed. Fittings shall be AWWA Specification C–153 for mechanical joint compact fittings. Payment includes furnishing and installing the fittings, gaskets, necessary adapters to connect to valves, joint restraints, and all other appurtenances necessary to install fittings on the water main. Payment will also include labor, equipment, handling, security, storage, installation, and all other incidentals.

5. Polyethylene Encasement – Payment will be included in the contract unit price per linear foot of the particular size pipe. All ductile iron piping, including fittings will be wrapped with polyethylene. Ductile iron pipe and fittings within five feet of gas lines shall be wrapped with minimum 60 mil thick polyethylene wrap equivalent to polywrap by Trumbull. Where polyethylene tubing is called for, this will include polyethylene tubing around all pipes and fittings exposed to the soil.

6. Metallic Detector Tape – No separate payment will be made for tape. The cost of furnishing and placing metal detector tape shall be included in the contract unit price for installing pipe.

7. Tracer Wire – No separate payment will be made for wire. The cost of furnishing and placing tracer wire shall be and reflected in the payment for the particular item of work to which it pertains.

8. Electronic Ball Markers – No separate payment will be made for electronic ball markers for locating underground utilities. Payment for furnishing and installation of ball markers as indicated on the plans shall be included in the contract price for installing the pipe.

9. Valves – Payment will be made at the contract unit price for each type and size. Payment will include furnishing and installing the valve, valve boxes, concrete collars, manholes, vaults, or extensions.

10. Cleaning and Disinfecting Water Mains – No separate payment will be made for cleaning and disinfecting. Cleaning and disinfecting

piping in the distribution system will be included in the lump sum and unit prices for the appropriate items.

11. Fire Hydrant Assembly – Payment will be made for each fire hydrant assembly actually furnished and installed as part of this work. Payment will include excavation, furnishing and installing hydrant tee, fire hydrant, 6" pipe from main to hydrant, gate valve, valve box, concrete collar, gravel sump, and restrained joints, backfilling, compaction, painting hydrant and all equipment, labor and materials necessary to complete the work. Note: hydrants are shown at the high points of newly installed water distribution work. Contractor shall be responsible for verifying location and elevation of existing water mains being tied into prior to construction. If it is determined that a neighboring fire hydrant is located at the high point of the system, and not the location of the proposed hydrant according to plans, Engineer may direct that the hydrant shown on plans needs not to be installed. If pipe configuration proposed by Contractor creates a new high point in the main, which deviates from the construction plans, a hydrant shall be installed at this location at the direction of the Engineer. Bid form will be used to determine a unit price for this item.

12. Restrained Joints – No separate payment will be made for restrained joints. Payment will be included in the item to which it pertains.

13. Remove Existing 8" Cap and Connect to Existing Water Main– Payment will be made at the contract price for Site Piping (as applicable), or for the tapping sleeves, valves, and boxes required to do the tying-in at each required location. Payment will include all equipment, labor, and materials required to locate, excavate, furnish and install fittings, remove caps, furnish and install tapping sleeve and equipment, valves, manholes, connection to existing main, backfilling, compaction, testing, and all other incidentals to complete the work in an acceptable and workmanlike manner.

14. Connect to Proposed Water Main – Payment will be made at the lump contract price for "Tie Into Elevated Water Storage Tank - Site Piping & Appurtenances." Payment will include all equipment, labor, and materials required to transition the site piping to the finished water extension divisions of the project. It shall include all coordination between individual contractors (if applicable) and any excavation, piping, manholes, connection to respective mains, backfilling, compaction, testing, fittings, and all other incidentals to complete the work in an acceptable and workmanlike manner.

FF. SECTION 33 11 00 – WELL HEAD PIPING

a. Existing Well Work - Payment for the wellhead piping, and all appurtenances to be removed and replaced shall be made under "Existing Well Work" The materials under this item shall be carefully removed and replaced as indicated in the plans and specifications. This item shall include all piping within a 5' of the well pad. This pay item shall also include the new

concrete pad, supports, and accessories associated with the well and piping included in this item. This item will include the specified flow meter and all testing associated with the above-ground piping at the well. All work under this item shall be painted as specified. Payment for the associated painting will also be included in this item.

For all piping and appurtenances to remain at the wellhead, they shall be properly sand blasted, prepped, painted, and sealed as specified. This work shall be measured and paid under "Existing Well Work" as indicated in the bid form. See Specification 09 90 00 – Painting.

All work completed to remove well head, motor, pump, and column and associated appurtenances for inspection and the inspection itself, including all labor and materials required for inspection, any inspection reports, any and all fees required to submit to any State agencies, all chemical equipment necessary for the disinfection shall be paid for under the lump sum "Existing Well Work" pay item.

b. Any damages found and possible improvements determined necessary for the complete operation of the well head, motor, pump, and column shall be made and paid out under the "Well Repair Allowance" item in the bid form as reviewed and approved by the Engineer and Owner.

c. If, during inspection, it is determined that the existing steel well casing is damaged, irreparable, and the existing well/pump cannot operate without repair or replacement to the existing steel well casing, payment will be made under the contingency unit price item of "Replacement of Steel Well Casing". This item will include all labor and materials required for replacement, all chemical equipment necessary for disinfection, and any incidentals pertaining to the replacement of the well casing.

GG. SECTION 33 12 23 – DISTRIBUTION PUMP STATION

a. The proposed distribution pumps including all suction and discharge mains, valves, and appurtenances within 5' of the proposed building foundation shall be paid for under the lump sum item "1,200 SF Well Treatment & Pump/Control Building Structure – Complete."

All miscellaneous appurtenances listed in this section shall be paid for under the same item.

HH. SECTION 33 16 13 – COMPOSITE ELEVATED WATER STORAGE TANK

a. Payment for the construction of the 500,000 Gallon Composite Elevated Water Storage Tank shall be made at the contract lump sum price for "Composite Elevated Water Storage Tank". Payment for tank will include design, earthwork, furnishing and constructing the elevated composite tank, foundation, pilings, all painting and coating systems, all interior piping and piping within 5 ft of the foundation, connecting to the site piping, overflow piping, valves, fittings, grating, doors, access hatches, interior and exterior ladders with safety climbing assemblies, the precast overflow structure, pressure transducers, pressure transmitter, overflow dissipation

pad, and accessories, all incidental construction and appurtenances required to complete the elevated tank.

b. Furnishing and installing the electrical systems for the tank, including obstruction lights, interior lighting and power systems, grounding and provisions for the pressure transmitter as shown on the drawings, and all SCADA materials and programming shall be included in the contract lump sum price for "Elevated Water Storage Tank Electrical - Complete".

II. SECTION 33 16 13.13 – ELEVATED STEEL WATER STORAGE TANK

a. Payment for the construction of a 500,000 Gallon Single Pedestal Elevated Water Storage Tank shall be made at the contract lump sum price for the "Single Pedestal Elevated Water Storage Tank". Payment for tank will include design, earthwork, furnishing and constructing the elevated steel tank, foundation, piling, all interior piping and piping within 5' of the foundation, connecting to the site piping, overflow piping, valves, the precast overflow structure, fittings, grating, doors, access hatches, interior and exterior ladders with safety climbing assemblies, pressure transducers, pressure transmitter, and accessories, all incidental construction and appurtenances required to complete the elevated tank. All painting and coating systems associated with this tank shall be included in this item. The furnishing and installation of electrical systems for the tank including obstruction lights, all SCADA materials, programming, controls, interior lighting and power systems, grounding and provisions for the pressure transmitter shall be measured and paid for under "Elevated Water Storage Tank Electrical– Complete" as shown in the drawings.

b. Payment for the construction of a 500,000 Gallon Multi Leg Elevated Water Storage Tank shall be made at the contract lump sum price for the "Multi Leg Elevated Water Storage Tank". Payment for tank will include design, earthwork, furnishing and constructing the elevated multi-leg steel tank, foundation, piling, all interior piping and piping within 5' of the foundation, connecting to the site piping, overflow piping, valves, fittings, grating, doors, access hatches, interior and exterior ladders with safety climbing assemblies, pressure transducers, pressure transmitter, the precast overflow structure, and accessories, all incidental construction and appurtenances required to complete the elevated tank. All painting and coating systems associated with this tank shall be included in this item. The furnishing and installation of electrical systems for the tank including obstruction lights, interior lighting and power systems, grounding and provisions for the pressure transmitter shall be measured and paid for under "Elevated Water Storage Tank Electrical – Complete" as shown in the drawings. The furnishing and installation of all SCADA materials and programming shall be included in the lump sum price for electrical work.

JJ. SECTION 33 16 13.16 – PRESTRESSED CONCRETE GROUND WATER STORAGE TANK

a. Payment for the work covered by this Section shall be made under the lump sum item "200,000 Gallon Ground Water Storage Tank – Complete". Payment shall include the cost of furnishing and erecting the water storage tanks as shown and specified. It shall include all safety features as shown

and specified. All pipe penetrations and piping, valves, and appurtenances outside of the storage tank in all directions. This item will include all disinfection of the tank as required by state and local regulations. This item shall include all SCADA programming and electrical work required to operate the ground storage tank.

b. The aerator as depicted in the plans shall be furnished and installed under the lump sum pay item "200,000 Gallon Ground Water Storage Tank – Complete" in the bid form. This item shall include all appurtenances associated with said aerator.

KK. SECTION 33 40 00 – STORM DRAINAGE

a. The total measurement of all storm drainage piping and appurtenances shall be that of a lump sum. No separate payment will be made for the work included in this Section. All costs and charges in connection therewith shall be included in the site piping bid item for the respective division. Site storm drainage and associated splash pad construction, stone bedding, culvert construction, etcetera shall be paid for under the respective site piping bid item.

LL. SECTION 35 01 40.92 – WATER MANAGEMENT SERVICES

a. N/A

MM. SECTION 46 01 00 – SCADA AND LOCAL CONTROL SYSTEMS

a. No separate measurement or payment will be made for SCADA and controls. Payment will be included in the item to which it pertains.

NN. GENERAL

a. All Special inspections shall be the responsibility of the Contractor, shall be in accordance with Chapter 17 (Special Inspections and Tests) of the 2018 International Building Code, as adapted by the State of Georgia, and will be paid for through the Allowance – "Special Inspections".

b. The lump sum item "Mobilization, Demobilization, Bonds, Insurance, & Permits" includes preparatory work and operations, including but not limited to, moving personnel, equipment, supplies and incidentals to the Project site. Mobilization also includes all other work and operations that shall be performed, or costs incurred before beginning work on the various items on the Project site. Mobilization also includes any costs associated with the Contractor's procurement of a project laydown area, materials storage or secure storage area.

c. The first regular payment is 50% of the amount bid for mobilization/demobilization, bonds, insurance & permits, or 3 percent of the original Contract amount, whichever is less.

d. When 5 percent of the original contract amount is earned, the next progress payment is 75% of the amount bid for mobilization, or 3 percent of

the total original contract amount, whichever is less, minus any previous payments.

e. Any amount bid for mobilization in excess of 3 percent of the original Contract amount is paid when work on the Project is complete.

f. The total sum of the payments shall not exceed the original Contract amount bid for this item.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO

SECTION 01 22 00

MEASUREMENT AND PAYMENT

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Measurement and payment criteria applicable to the Work performed based on the percentage of work completed under a lump sum price payment method.

1.2 AUTHORITY

A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

B. Take all measurements and compute quantities. The Engineer will verify measurements and quantities.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.3 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Owner determine payment.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.4 MEASUREMENT OF QUANTITIES

A. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

B. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

C. Measurement by Area: Measured by square dimension using mean length and width or radius.

D. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

E. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

A. SECTION 02 30 00 – SUBSURFACE INVESTIGATION

a. There will be no separate measurement or payment made for subsurface investigation. Payment for verifying subsurface conditions shall be considered a subsidiary obligation of the contract.

B. SECTION 02 41 13 – SELECTIVE SITE DEMOLITION

a. There will be no separate measurement for selective demolition. Payment will be included in the item to which it pertains. Payment will include equipment, labor, materials, protection, clean–up, disposal, and all work necessary to complete the selective demolition shown on the construction drawings.

C. SECTION 03 00 00 – SITE CONCRETE

a. Site Concrete – All concrete work will be considered a part of the structure in which it is used, and no direct measurement or payment will be made.

b. Site concrete pavements, sidewalks - regardless of thickness - shall be paid for under the lump sum "Clearing, Erosion Control, Site Work, & Landscaping" item for that division.

c. Remove and Replace Concrete – Concrete pavement and sidewalk, regardless of thickness, shall be measured and paid for by the square yard of finished surface complete in plans. Surface course and subsurface courses shall be restored to match the existing concrete.

d. Payment shall constitute full compensation for furnishing all materials, equipment, tools, forms, inserts, and all labor and incidentals needed to complete the work required by these specifications. No payment will be made for any material wasted, used for the convenience of the Contractor, unused or rejected.

e. No separate payment shall be made for additional concrete included in this Section. All costs and charges in connection herein shall be included and reflected in the payment for the particular item of work to which it pertains. Pre-cast structures shall be paid for under the lump sum "Clearing, Erosion Control, Site Work, & Landscaping" item for that division, unless explicitly mentioned elsewhere.

D. SECTION 03 10 00 – CONCRETE FORMING AND ACCESSORIES

a. No separate measurement will be made for concrete forming. Payment will be included in the item to which it pertains.

E. SECTION 03 20 00 - CONCRETE REINFORCING

a. No separate measurement will be made for site concrete reinforcing. Payment will be included in the item to which it pertains.

F. SECTION 03 30 00 – CAST–IN–PLACE CONCRETE

a. All concrete work will be considered a part of the structure in which it is used and no direct measurement or payment will be made.

G. SECTION 04 22 00 – CONCRETE UNIT MASONRY

a. All construction materials furnished and installed within the bounds of the water treatment building shall fall under the lump sum payment item "1,200 SF Well Treatment & Pump/Control Building Structure - Complete". This includes all materials integral to the building itself. For example, roofing, wall materials, floor materials. It also includes safety features and appurtenances and all other items pertinent to the overall function of the building. Pumps and piping, electrical work and materials, chemical equipment, and all other items associated with the building are also included in this lump sum pay item. This item shall include any and all utility reimbursements associated with pervious services and services to the new facility. All utilities within 5' of the foundation shall be included in this item as well as coordinating with the electrical utility to provide the service. This item shall include any building permits and fees associated with such for the proposed facility.

H. SECTION 05 50 00 – METAL FABRICATIONS

a. No separate measurement will be made for metal fabrications. Payment will be included in the item to which it pertains.

I. SECTION 06 10 00 – ROUGH CARPENTRY

a. No separate measurement will be made for rough carpentry. Payment will be included in the item to which it pertains.

J. SECTION 06 16 00 – SHEATHING

a. No separate measurement will be made for sheathing. Payment will be included in the item to which it pertains.

K. SECTION 06 17 53 – SHOP–FABRICATED WOOD TRUSSES

a. No separate measurement will be made for wood trusses. Payment will be included in the item to which it pertains.

L. SECTION 09 90 00 – PAINTING

a. No separate payment will be made for painting. All costs and charges in connection therewith shall be included and reflected in the payment for the particular item of work to which it pertains.

M. SECTION 09 96 00 – COATING SYSTEM FOR WATER STORAGE TANKS

a. Payment will be included in the lump sum price for the complete tank associated with each painting and coating system. See Sections 33 16 13 and 33 16 13.13 for elevated tank painting measurement and payment. Payment shall be made for cleaning, surface preparation, application, design and application of Owner selected color schemes, lettering, up to two logos, touch–up, and incidentals included in the coating system shall be made under this same price. Painting for the ground storage tank such shall be included in the item "200,000 Gallon Ground Water Storage Tank."

N. SECTION 26 00 00 – ELECTRICAL GENERAL

a. No separate measurement or payment shall be made for electrical work in Division I. SCADA and electrical work for the ground storage tank, and the treatment/control building shall be paid for under the respective items. SCADA and electrical for any and all meters, BFVs, controls, sumps, etcetera, associated with site piping shall be paid for under "1,200 SF Well Treatment & Pump/Control Building Structure – Complete."

b. All electrical work related to division II shall be paid under Elevated Water Storage Tank Electrical – Complete. Startup shall be included in this item as well.

O. SECTION 26 32 13 – ENGINE GENERATORS

a. No separate measurement or payment shall be made for engine generators. Any and all labor, materials, and incidentals, including slab for generator shall be paid for under "1,200 SF Well Treatment & Pump/Control Building Structure – Complete."

P. SECTION 31 00 00 – EARTHWORK

a. The following items shall be paid under the lump sum bid item titled "Clearing, Erosion Control, Site Work, & Landscaping." - All grading to subgrades, construction of ditches, dressing of disturbed areas, removing and replacing topsoil, excavating, backfilling and compacting to required elevations, testing, staking, and construction supervision. All site restoration to bring site to quality of existing site or better that is not exclusively included in other items shall be included in the lump sum payment of "Clearing, Erosion Control, Site Work, & Landscaping."

b. Stone Bedding and Sand Backfill – No separate measurement or payment shall be made for stone bedding and sand backfill. Stone bedding shall be No. 57 stone as defined in the Specifications; no recycled concrete or other substitute materials shall be allowed. Sand backfill shall be select suitable material as defined in this Section. The cost for stone bedding and sand backfill shall be included in the overall cost of the pipe or structure for each associated pay item. Payment for the installation of water-line bedding or associated structures shall be as shown in details. Where the Engineer determines that additional stone or sand beyond that shown on the detail

is required, it shall be paid for at the cost of furnishing and placing the select backfill and stone bedding. Because these items are of an indeterminate quantity, the bid form includes a nominal quantity in cubic yards (CY) of stone bedding and sand backfill in order to establish a unit price for these items. No payment for stone bedding or sand backfill will be made during construction without approval of location, quantity, and overall price by Engineer and Owner.

c. Unsuitable Material – Payment for this item will not be made without written authorization from Owner and Engineer. Because this item is of an indeterminate quantity, the bid form includes a nominal quantity in cubic yards (CY) of unsuitable material in order to establish a unit price for these items. Payment will be made on a contract unit price for each cubic yard removed and replaced with suitable material. Payment will include excavation and disposal of unsuitable material.

d. Borrow – No separate measurement or payment shall be made for the removal or disposal of unsuitable material and replacement of suitable borrow material. The cost for backfilling with suitable borrow material including select material as required for pavement subgrade, fill, and backfill shall be included in the unit price for the item to which it pertains.

e. Earthwork – All earthwork associated with the installation of headwalls, stie piping, pump station, access road, tank foundation, rip–rap, etc. shall not be measured for direct payment. Payment for the earthwork shall be included in the item to which it pertains.

f. Dewatering – Measurement and payment will be made at the contract lump sum "Clearing, Erosion Control, Site Work, & Landscaping." The Contractor shall remove water from the site and shall lower the groundwater level as necessary to complete the excavations to the required depths and so that all required work can be accomplished in the dry. Dewatering shall be accomplished in a manner so as to cause no impact to adjacent buildings or structures. The Contractor shall do such well construction, well pointing, sheeting, ditching, and pumping, and shall construct necessary drains, channels, and sumps to keep his excavations and new structures clear of groundwater, stormwater, or sewage and to keep his construction areas dry during the progress of the work.

Adequate measures and protection shall be provided by the Contractor to protect his work from damage from uplift due to groundwater, stormwater, or flood water. Any damages that may result shall be the Contractor's responsibility. The Contractor shall accept all responsibility for damage to the work of his Contract because of floods and water pressures and other water damages and shall accept all risks of floods and other events that may occur. All water discharged by pumping operations shall be discharged so as not to interfere with work under this contract or with existing structures and operations. Water from dewatering operations shall be conveyed to the existing drainage features, using piping and pumping facilities provided by the Contractor.

Route of dewatering pipe shall be subject to the Engineer and Owner's review. Discharge facilities and water quality shall comply with applicable regulation of State and Federal agencies. Any and all required water quality treatment from the dewatering activities and prior to discharge is responsibility of the Contractor.

Dewatering operations shall be uninterrupted and continuous during the course of the work so as not to endanger any construction in place or to present a hazard to workmen in and around the site. The Contractor shall take all measures necessary, including but not limited to, standby equipment and constant attendance to ensure that the dewatering system remains operational and effective through the period of time that it is required. No water shall be allowed to run over any uncompleted portions of the work. No units of the work shall be constructed under water. The cost of dewatering shall be included in the price bid for the item of work for which it is required.

g. All payment and measurement for other items shall be included for the item to which it pertains.

Q. SECTION 31 10 00 – SITE CLEARING

a. Site Clearing, grubbing and other items to be removed will be included in the lump sum price "Clearing, Erosion Control, Site Work, & Landscaping" item for that division. Includes clearing site, removing vegetation, protecting vegetation to remain, trimming trees removing stumps, loading and removing waste materials. The removal and disposal of trees identified in the demolition plans shall be included in this pay item.

R. SECTION 31 25 00 – SOIL EROSION CONTROL

a. No unit measurements will be made for soil erosion control. Payment will be made at the lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" as shown on the bid proposal. The cost of soil erosion control shall include all equipment, labor and materials necessary to comply with the State Georgia Erosion and Sediment Control Program. Contractor must incorporate the cost of complying with federal, state, and local agencies in the price for the job.

b. A contingency item titled " Removal and Replacement of Erosion and Sediment Control in Case of a Named Severe Weather Event " is included for the removal and replacement of Erosion and Sediment Controls in the case of a named severe weather event, based on the linear feet of controls in place.

S. SECTION 31 25 00GA – EROSION, SEDIMENTATION, AND POLLUTION CONTROL (GA)

a. See above – Section 31 25 00

T. SECTION 31 37 00 – RIP–RAP

a. Rip-Rap: Payment will be made at the lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" as shown on the bid form. The lump sum price shall include all costs and labor to furnish and install rip-rap as shown and described in the plans.

U. SECTION 31 62 13 – CONCRETE PILES

a. No measurement or payment will be made for concrete piles. The cost of verifying soil conditions, selecting a foundation design, set up, application of test loads, testing equipment, monitoring, reporting, and incidentals associated with test piles shall be included in the contract lump sum price for the selected elevated water storage tank design alternative.

V. SECTION 31 63 16 – AUGER CAST GROUT PILES

a. No measurement or payment will be made for concrete piles. The cost of verifying soil conditions, selecting a foundation design, set up, application of test loads, testing equipment, monitoring, reporting, and incidentals associated with test piles shall be included in the contract lump sum price for the selected elevated water storage tank design alternative.

W. SECTION 32 00 00 – SURFACE RESTORATION

a. Protection of structures for all divisions shall be paid for under "Clearing, Erosion Control, Site Work, & Landscaping" when objects to remain shall be avoided except where explicitly mentioned elsewhere. Protection shall include all materials, equipment, labor, and cleanup required to protect existing structures to remain.

b. There will be no measurement for Traffic Control. Payment will be made at the contract lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" Payment will include all planning, equipment, labor, materials, protection, clean-up, disposal, and all work necessary to complete the traffic control necessary to complete the work.

c. No measurement or payment will be made for thermoplastic markings. The replacement of any thermoplastic markings and warnings as disturbed by this work shall be paid for under the lump sum "Clearing, Erosion Control, Site Work, & Landscaping".

X. SECTION 32 11 23 – AGGREGATE BASE COURSE

a. Aggregate Base Course: Payment will be made under the unit or lump sum unit price for the respective material that is being laid that requires aggregate base course. Additionally, the payment will include all material, labor, clean-up, and incidentals to make the installation.

b. Prime Coat: Bituminous prime coat will not be measured for separate payment. All costs connected with applying prime coat shall be included in the unit price bid for the respective material that is being laid that requires prime coat.

c. Access Road Route Construction, & Tree Protection: Payment will be made at the Contract lump sum price for "Access Road Route Construction, & Tree Protection". Item will include all necessary removal and disposal of unsuitable material, fill material, installation, geogrid, grading and compaction of the road and ditches. The "Access Road" section shall be per Geotechnical Report recommendation. Additionally, the payment will include all material, labor, clean-up, and incidentals to make the installation.

Payment shall include the labor and planning required for submitting an Access Road Routing and Demolition Plan inclusive of proposed clearing and any grading. Contractor to minimize tree removal to the greatest extent practicable, while permitting the flow of traffic for construction vehicles required to perform Division II work. Access Road Routing and Demolition Plan shall indicate the trees to be preserved in addition to those removed. The contractor may employ an arborist to assess the viability of trees to remain at no additional cost to the Owner.

Y. SECTION 32 12 16GA – ASPHALT PAVING

a. Remove and Replace Asphalt: Will be paid for at the contract unit price per square yard, regardless of thickness of existing asphalt paving or type & thickness of underlying base material. Payment will include all include all aggregate base course, prime coat, binder courses, surface courses, tack coats, cleaning, placing, compacting, testing, and all other appurtenances related to the replacement of asphalt concrete pavement per the municipality's standards and specifications.

Z. SECTION 32 31 13 – CHAIN LINK FENCES AND GATES

a. Fencing and Gates: Payment for chain–link fence, complete, will be included in the lump sum price for "Clearing, Erosion Control, Site Work, & Landscaping" for the respective division that calls for fencing and gates.

AA. SECTION 32 90 00 – LANDSCAPING

a. Payment for grassing will be made at contract lump sum price for the item "Clearing, Erosion Control, Site Work, & Landscaping". Such payment shall constitute full compensation for furnishing and placing seed, sprig, topsoil, fertilizer, sod, mulch, or any combination of such where directed, where ground has been disturbed, where paving, stone, or other surface restoration is not indicated to take place, and protecting and maintaining seed and sod in all graded and distributed areas.

b. When the season or stage of project is such that results of grassing work cannot be determined, conditional acceptance will be made on work completed. When conditional acceptance is made for items of work covered. Contractor shall be entitled to 50% of bid price for the actual work placed and shall receive remaining 50% of bid price when final acceptance is made. Conditional acceptance shall not apply to the remaining items of work, and full bid price payment shall be made when

work is acceptably placed and completed in accordance with specification.

BB. SECTION 33 05 01.20 – FUSIBLE POLYVINYLCHLORIDE PIPE FOR INSTALLATION BY HORIZONTAL DIRECTIONAL DRILLING (HDD)

a. Horizontal Directional Drilling – Payment shall be made at the contract unit price for each size and type of pipe installed. Payment will include preparation of installation plan, mobilization, fusing of pipe, necessary pipe supporting means during fusion process, necessary water supply during drilling process, other equipment, accessories, excavation, dewatering, mucking, borrow, handling of drilling mud, set–up, preparation of IRCP, drilling operations, FPVC/HDPE to PVC connection couplings, testing, and any other items necessary to complete successful bores with satisfactory tests completed before payment is made. Payment will also include labor, equipment, handling, security, storage, installation, clean up, restoration, and all other incidentals. Payment will only be made for the linear foot price of piping installed; no additional payment will be made for any potential excess FPVC. Measurement for payment will be based on the final in–place cut lengths of fusible pipe on a linear foot basis in a horizontal plane. There shall be no separate measurement or payment for additional drilling or pipe lengths needed to start and terminate the borings or for abandoned bores.

CC. SECTION 33 05 23.13 – UTILITY HORIZONTAL DIRECTIONAL DRILLING

a. See above – Section 33 05 01.20

DD. SECTION 33 05 23.14 – HORIZONTAL DIRECTIONAL DRILLING (HDD) INADVERTENT RELEASE CONTROL PLAN (IRCP)

a. See above – Section 33 05 01.20

EE. SECTION 33 10 00 – WATER DISTRIBUTION SYSTEM

a. Measurement –

1. The length of mains and branch lines to be paid for will be determined by measurement along the centerline of the various sizes and types of pipes actually furnished and installed, from the center of fitting, and from the center of the main to the end of the branch connection. No deduction will be made for the space occupied by valves and fittings.

2. Lump Sum items to not be measured in units but to be paid out under the lump sum required to furnish and install all materials under said item.

3. Per each items to be measured for the entirety of that unit that was installed.

b. Payment –

1. Pipe – Payment will be made at the contract unit price per linear foot for the various types and sizes of pipe that are actually placed as shown on the plans, or as directed by the Engineer. All costs for piping shall be included and reflected in the payment for the particular item of work to which it pertains. Payment will include the pipe, polyethylene tube encasement, coatings, excavation, removal and disposal of unsuitable material, installation, geotextile, bedding, electronic markers, joint restraints, mucking, dewatering, backfilling with suitable material, compaction, flushing, testing, disinfecting, grassing, grading, borrow material, tracing wire, warning tape, labor, equipment, materials, and all other incidentals to the installation of the pipes shall be considered as subsidiary obligations of the Contractor for completion of the line in place. The length of mains and branch lines to be paid for will be determined by measurement along the centerline of the various sizes and types of pipe actually furnished and installed, from the center of fitting, and from the center of the main to the end of the branch connection. No deduction will be made for the space occupied by valves and fittings. Satisfactory tests must be completed before payment is made.

2. Payment will be made all interior pumps and piping for Division I at the contract lump sum price "1,200 SF Well Treatment & Pump/Control Building Structure – Complete." The work described by this item shall be inclusive of all materials and labor required to install any and all water piping associated with distribution within the footprint of the building. This includes the water service line, all hose bibs, and the emergency shower. This is inclusive of all drainage pipe within the footprint of the building including the sump pump. The pay line of this item will be to 5 feet outside of the perimeter of the building. This item is inclusive of all chemical feed equipment within 5' of the pump building footprint. It shall be inclusive of all analyzers, chlorination supplies, sensors, pumps, alarms, and all other listed equipment for phosphate and chlorine dosing. The SCADA programming associated with chemical feeds shall also be included in this pay item. Startup shall be included in this item as well.

3. Site Piping – Payment will be made at the contract lump sum price. The work described by this item shall be inclusive of all materials and labor required to install any and all water and drainage piping associated with distribution outside of the 5–foot footprint of the building & groundwater storage tank, and elevated water storage tank for Division I and Division II respectively, per the bid form. This work is inclusive of the tie–in point to the distribution system on the well treatment site. This item includes the water service line up to 5 feet outside of the footprint of the proposed building & tank(s) including the meter, RPZ, and yard hydrant. This is inclusive of all drainage pipe outside of the 5 foot footprint of the building. This item includes any and all chemical feed lines, analyzing lines, all drainage connections, the flowmeters, meters, and BFVs with associated manholes and vaults, flexible joints and valves to the

proposed groundwater storage tank. The pay line to well piping for this item will be located 5' from the well slab perimeter.

Site Piping for Division II shall include the Altitude Valve Assembly on Slab – Payment will be made at the contract lump sum price for site piping. The work described by this item shall be inclusive of all materials and labor required to install the altitude valve, check valve, the bypass connection, valves, associated concrete structures, accessories, testing, sampling, drainage, and connections to the newly proposed elevated tank site piping. Electrical work and controls associated with the altitude valve shall be paid for under "Elevated Water Storage Tank Electrical – Complete"

4. Fittings – Payment will be made at the contract unit price for each size and type of ductile iron restrained fitting installed. Fittings shall be AWWA Specification C–153 for mechanical joint compact fittings. Payment includes furnishing and installing the fittings, gaskets, necessary adapters to connect to valves, joint restraints, and all other appurtenances necessary to install fittings on the water main. Payment will also include labor, equipment, handling, security, storage, installation, and all other incidentals.

5. Polyethylene Encasement – Payment will be included in the contract unit price per linear foot of the particular size pipe. All ductile iron piping, including fittings will be wrapped with polyethylene. Ductile iron pipe and fittings within five feet of gas lines shall be wrapped with minimum 60 mil thick polyethylene wrap equivalent to polywrap by Trumbull. Where polyethylene tubing is called for, this will include polyethylene tubing around all pipes and fittings exposed to the soil.

6. Metallic Detector Tape – No separate payment will be made for tape. The cost of furnishing and placing metal detector tape shall be included in the contract unit price for installing pipe.

7. Tracer Wire – No separate payment will be made for wire. The cost of furnishing and placing tracer wire shall be and reflected in the payment for the particular item of work to which it pertains.

8. Electronic Ball Markers – No separate payment will be made for electronic ball markers for locating underground utilities. Payment for furnishing and installation of ball markers as indicated on the plans shall be included in the contract price for installing the pipe.

9. Valves – Payment will be made at the contract unit price for each type and size. Payment will include furnishing and installing the valve, valve boxes, concrete collars, manholes, vaults, or extensions.

10. Cleaning and Disinfecting Water Mains – No separate payment will be made for cleaning and disinfecting. Cleaning and disinfecting

piping in the distribution system will be included in the lump sum and unit prices for the appropriate items.

11. Fire Hydrant Assembly – Payment will be made for each fire hydrant assembly actually furnished and installed as part of this work. Payment will include excavation, furnishing and installing hydrant tee, fire hydrant, 6" pipe from main to hydrant, gate valve, valve box, concrete collar, gravel sump, and restrained joints, backfilling, compaction, painting hydrant and all equipment, labor and materials necessary to complete the work. Note: hydrants are shown at the high points of newly installed water distribution work. Contractor shall be responsible for verifying location and elevation of existing water mains being tied into prior to construction. If it is determined that a neighboring fire hydrant is located at the high point of the system, and not the location of the proposed hydrant according to plans, Engineer may direct that the hydrant shown on plans needs not to be installed. If pipe configuration proposed by Contractor creates a new high point in the main, which deviates from the construction plans, a hydrant shall be installed at this location at the direction of the Engineer. Bid form will be used to determine a unit price for this item.

12. Restrained Joints – No separate payment will be made for restrained joints. Payment will be included in the item to which it pertains.

13. Remove Existing 8" Cap and Connect to Existing Water Main– Payment will be made at the contract price for Site Piping (as applicable), or for the tapping sleeves, valves, and boxes required to do the tying-in at each required location. Payment will include all equipment, labor, and materials required to locate, excavate, furnish and install fittings, remove caps, furnish and install tapping sleeve and equipment, valves, manholes, connection to existing main, backfilling, compaction, testing, and all other incidentals to complete the work in an acceptable and workmanlike manner.

14. Connect to Proposed Water Main – Payment will be made at the lump contract price for "Tie Into Elevated Water Storage Tank - Site Piping & Appurtenances." Payment will include all equipment, labor, and materials required to transition the site piping to the finished water extension divisions of the project. It shall include all coordination between individual contractors (if applicable) and any excavation, piping, manholes, connection to respective mains, backfilling, compaction, testing, fittings, and all other incidentals to complete the work in an acceptable and workmanlike manner.

FF. SECTION 33 11 00 – WELL HEAD PIPING

a. Existing Well Work - Payment for the wellhead piping, and all appurtenances to be removed and replaced shall be made under "Existing Well Work" The materials under this item shall be carefully removed and replaced as indicated in the plans and specifications. This item shall include all piping within a 5' of the well pad. This pay item shall also include the new

concrete pad, supports, and accessories associated with the well and piping included in this item. This item will include the specified flow meter and all testing associated with the above-ground piping at the well. All work under this item shall be painted as specified. Payment for the associated painting will also be included in this item.

For all piping and appurtenances to remain at the wellhead, they shall be properly sand blasted, prepped, painted, and sealed as specified. This work shall be measured and paid under "Existing Well Work" as indicated in the bid form. See Specification 09 90 00 – Painting.

All work completed to remove well head, motor, pump, and column and associated appurtenances for inspection and the inspection itself, including all labor and materials required for inspection, any inspection reports, any and all fees required to submit to any State agencies, all chemical equipment necessary for the disinfection shall be paid for under the lump sum "Existing Well Work" pay item.

b. Any damages found and possible improvements determined necessary for the complete operation of the well head, motor, pump, and column shall be made and paid out under the "Well Repair Allowance" item in the bid form as reviewed and approved by the Engineer and Owner.

c. If, during inspection, it is determined that the existing steel well casing is damaged, irreparable, and the existing well/pump cannot operate without repair or replacement to the existing steel well casing, payment will be made under the contingency unit price item of "Replacement of Steel Well Casing". This item will include all labor and materials required for replacement, all chemical equipment necessary for disinfection, and any incidentals pertaining to the replacement of the well casing.

GG. SECTION 33 12 23 – DISTRIBUTION PUMP STATION

a. The proposed distribution pumps including all suction and discharge mains, valves, and appurtenances within 5' of the proposed building foundation shall be paid for under the lump sum item "1,200 SF Well Treatment & Pump/Control Building Structure – Complete."

All miscellaneous appurtenances listed in this section shall be paid for under the same item.

HH. SECTION 33 16 13 – COMPOSITE ELEVATED WATER STORAGE TANK

a. Payment for the construction of the 500,000 Gallon Composite Elevated Water Storage Tank shall be made at the contract lump sum price for "Composite Elevated Water Storage Tank". Payment for tank will include design, earthwork, furnishing and constructing the elevated composite tank, foundation, pilings, all painting and coating systems, all interior piping and piping within 5 ft of the foundation, connecting to the site piping, overflow piping, valves, fittings, grating, doors, access hatches, interior and exterior ladders with safety climbing assemblies, the precast overflow structure, pressure transducers, pressure transmitter, overflow dissipation

pad, and accessories, all incidental construction and appurtenances required to complete the elevated tank.

b. Furnishing and installing the electrical systems for the tank, including obstruction lights, interior lighting and power systems, grounding and provisions for the pressure transmitter as shown on the drawings, and all SCADA materials and programming shall be included in the contract lump sum price for "Elevated Water Storage Tank Electrical - Complete".

II. SECTION 33 16 13.13 – ELEVATED STEEL WATER STORAGE TANK

a. Payment for the construction of a 500,000 Gallon Single Pedestal Elevated Water Storage Tank shall be made at the contract lump sum price for the "Single Pedestal Elevated Water Storage Tank". Payment for tank will include design, earthwork, furnishing and constructing the elevated steel tank, foundation, piling, all interior piping and piping within 5' of the foundation, connecting to the site piping, overflow piping, valves, the precast overflow structure, fittings, grating, doors, access hatches, interior and exterior ladders with safety climbing assemblies, pressure transducers, pressure transmitter, and accessories, all incidental construction and appurtenances required to complete the elevated tank. All painting and coating systems associated with this tank shall be included in this item. The furnishing and installation of electrical systems for the tank including obstruction lights, all SCADA materials, programming, controls, interior lighting and power systems, grounding and provisions for the pressure transmitter shall be measured and paid for under "Elevated Water Storage Tank Electrical– Complete" as shown in the drawings.

b. Payment for the construction of a 500,000 Gallon Multi Leg Elevated Water Storage Tank shall be made at the contract lump sum price for the "Multi Leg Elevated Water Storage Tank". Payment for tank will include design, earthwork, furnishing and constructing the elevated multi-leg steel tank, foundation, piling, all interior piping and piping within 5' of the foundation, connecting to the site piping, overflow piping, valves, fittings, grating, doors, access hatches, interior and exterior ladders with safety climbing assemblies, pressure transducers, pressure transmitter, the precast overflow structure, and accessories, all incidental construction and appurtenances required to complete the elevated tank. All painting and coating systems associated with this tank shall be included in this item. The furnishing and installation of electrical systems for the tank including obstruction lights, interior lighting and power systems, grounding and provisions for the pressure transmitter shall be measured and paid for under "Elevated Water Storage Tank Electrical – Complete" as shown in the drawings. The furnishing and installation of all SCADA materials and programming shall be included in the lump sum price for electrical work.

JJ. SECTION 33 16 13.16 – PRESTRESSED CONCRETE GROUND WATER STORAGE TANK

a. Payment for the work covered by this Section shall be made under the lump sum item "200,000 Gallon Ground Water Storage Tank – Complete". Payment shall include the cost of furnishing and erecting the water storage tanks as shown and specified. It shall include all safety features as shown

and specified. All pipe penetrations and piping, valves, and appurtenances outside of the storage tank in all directions. This item will include all disinfection of the tank as required by state and local regulations. This item shall include all SCADA programming and electrical work required to operate the ground storage tank.

b. The aerator as depicted in the plans shall be furnished and installed under the lump sum pay item "200,000 Gallon Ground Water Storage Tank – Complete" in the bid form. This item shall include all appurtenances associated with said aerator.

KK. SECTION 33 40 00 – STORM DRAINAGE

a. The total measurement of all storm drainage piping and appurtenances shall be that of a lump sum. No separate payment will be made for the work included in this Section. All costs and charges in connection therewith shall be included in the site piping bid item for the respective division. Site storm drainage and associated splash pad construction, stone bedding, culvert construction, etcetera shall be paid for under the respective site piping bid item.

LL. SECTION 35 01 40.92 – WATER MANAGEMENT SERVICES

a. N/A

MM. SECTION 46 01 00 – SCADA AND LOCAL CONTROL SYSTEMS

a. No separate measurement or payment will be made for SCADA and controls. Payment will be included in the item to which it pertains.

NN. GENERAL

a. All Special inspections shall be the responsibility of the Contractor, shall be in accordance with Chapter 17 (Special Inspections and Tests) of the 2018 International Building Code, as adapted by the State of Georgia, and will be paid for through the Allowance – "Special Inspections".

b. The lump sum item "Mobilization, Demobilization, Bonds, Insurance, & Permits" includes preparatory work and operations, including but not limited to, moving personnel, equipment, supplies and incidentals to the Project site. Mobilization also includes all other work and operations that shall be performed, or costs incurred before beginning work on the various items on the Project site. Mobilization also includes any costs associated with the Contractor's procurement of a project laydown area, materials storage or secure storage area.

c. The first regular payment is 50% of the amount bid for mobilization/demobilization, bonds, insurance & permits, or 3 percent of the original Contract amount, whichever is less.

d. When 5 percent of the original contract amount is earned, the next progress payment is 75% of the amount bid for mobilization, or 3 percent of

the total original contract amount, whichever is less, minus any previous payments.

e. Any amount bid for mobilization in excess of 3 percent of the original Contract amount is paid when work on the Project is complete.

f. The total sum of the payments shall not exceed the original Contract amount bid for this item.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO

SECTION 01 33 00

SUBMITTAL PROCEDURES

DIVISION I – GENERAL REQUIREMENTS

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Product Data.

D. Shop Drawings.

E. Samples.

F. Design data.

G. Test reports.

H. Certificates.

I. Manufacturer's instructions.

J. Manufacturer's field reports.

K. Erection drawings.

1.2 RELATED SECTIONS

A. Section 01 45 00 – Quality Control: Manufacturers' field services and reports.

B. Section 01 77 00 – Contract Closeout: Contract warranties, bonds, manufacturers' certificates, and closeout submittals.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with Engineer accepted form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix. Resubmit as specified for initial submittal. Indicate on revised drawings all changes that have been made other than those requested by the Engineer.

C. Identify Project, Contractor, Subcontractor, or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

D. Apply Contractor's stamp, signed or initialed verifying review, approval, products required, field dimensions, adjacent construction Work, and coordination of

information is in accordance with the requirements of the Work and Contract Documents. Submittal without the Contractor's stamp will be returned to Contractor without Engineer's review.

E. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery. In scheduling, allow sufficient time for the Engineer's review following the receipt of the submittal. Coordinate submission of related items. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

F. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.

G. Provide space for Contractor and Architect/Engineer review stamps.

H. When revised for resubmission, identify all changes made since previous submission.

I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedule in duplicate within 10 days after date established in Notice to Proceed.

B. Revise and resubmit as required.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit a computer generated or horizontal bar chart with separate line for each section of Work, identifying first work day of each week.

E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by allowances.

1.5 PRODUCT DATA

A. Product Data For Review:

1. Submitted to Engineer for review and conformance with information given in specifications and the design concept expressed in contract documents.

2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above.

B. Submit the number of copies Contractor and Owner require, plus two copies retained by Engineer.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, distribute in accordance with the Submittal Procedures article above.

1.6 SHOP DRAWINGS

A. Contractor shall submit a minimum six (6) copies of each shop drawing to the Engineer for review.

B. Submitted to Engineer for review and conformance with information given in specifications and design concept expressed in contract documents. Review of shop drawings by Engineer shall not relieve Contractor of its responsibility for accuracy of shop drawings nor for furnishing of all materials and equipment required by the contract even though such items may not be indicated on shop drawings reviewed by Engineer.

C. Shop drawings shall include applicable technical information, drawings, diagrams, performance curves, schedules, templates, calculations, instructions, measurements, and similar information as applicable to the specific item for which shop drawing is prepared.

D. Do <u>not</u> use Engineer's Drawings for shop or erection purposes.

E. Each shop drawing copy shall bear a Contractor's stamp showing they have been checked. Shop drawings submitted to the Engineer without Contractor's stamp will be returned to Contractor without review.

No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the Contractor's responsibility to assemble shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to Engineer.

Schedule of Submittals: Within 30 days of Contract award and prior to any shop drawing submittal, Contractor shall submit a schedule showing the estimated submittal date and desired acceptance date for each shop drawing

anticipated. Time lost due to unacceptable submittals shall be the Contractor's responsibility.

1.7 SAMPLES

A. Samples For Review:

1. Submitted to Engineer for review and conformance with information given in specifications and design concept expressed in contract documents.

2. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above.

B. Samples For Information:

1. Submitted for Engineer's knowledge as contract administrator or for the Owner.

C. Include identification on each sample, with full product information.

D. Submit the number of samples specified in individual specification sections; one of which will be retained by Engineer.

E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

F. Samples will not be used for testing purposes unless specifically stated in the specification section.

1.8 DESIGN DATA

A. Submit for Engineer's knowledge as contract administrator or for the Owner.

B. Submit for information and conformance with information given in specifications and design concept expressed in contract documents.

1.9 TEST REPORTS

A. Submit for Engineer's knowledge as contract administrator or for the Owner.

B. Submit test reports for information and assessing conformance with information given in specifications and design concept expressed in contract documents.

1.10 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start–up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

C. Refer to Section 01 45 00 – Quality Control, Manufacturers' Field Services article.

1.12 MANUFACTURER'S FIELD REPORTS

A. Submit reports for Engineer's benefit as contract administrator or for the Owner.

B. Submit report in duplicate within 30 days of observation to Engineer for information.

C. Submit for information and assessing conformance with information given in specifications and design concept expressed in contract documents.

1.13 ERECTION DRAWINGS

A. Submit drawings for Engineer's benefit as contract administrator or for the Owner.

B. Submit for information and assessing conformance with information given in specifications and design concept expressed in contract documents.

C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

1.14 REVIEWED SHOP DRAWINGS

A. Engineer Review.

1. Acceptable submittals will be marked “No Exceptions Taken.” A minimum of three copies will be retained by the Engineer for Engineer’s and Owner’s use and remaining copies will be returned to Contractor.

2. Submittals requiring minor corrections before the product is acceptable will be marked “Furnish as Corrected.” Contractor may order, fabricate, and ship items included in submittals, provided the indicated corrections are made.

3. Submittals marked “Revise and Resubmit” must be revised to reflect required changes and the initial review procedure repeated.

4. The “Rejected” notation is used to indicate products not acceptable. Upon return of a submittal so marked, Contractor shall repeat the initial review procedure utilizing acceptable products.

5. Only two copies of items marked "Revise and Resubmit" and "Rejected" will be reviewed and marked. One copy will be retained by Engineer and the other copy with all remaining unmarked copies will be returned to Contractor for resubmittal.

B. No Work or products shall be installed without a drawing or submittal bearing the "No Exceptions Taken" or "Furnish as Corrected" notation. Contractor shall maintain at the job site a complete set of shop drawings bearing Engineer's stamp.

C. Substitutions: In the event Contractor obtains Engineer's acceptance for use of products other than those listed first in Contract Documents, Contractor shall, at Contractor's own expense and using methods accepted by Engineer, make any changes to structures, piping and electrical work necessary to accommodate these products.

D. Use of "No Exceptions Taken" or "Furnish as Corrected" notation on shop drawings or other submittals is general and shall not relieve Contractor of the responsibility of furnishing products of proper dimension, size, quality, quantity, materials, all performance characteristics, and to efficiently perform requirements and intent of Contract Documents. Engineer's review shall not relieve Contractor of the responsibility of errors of any kind on shop drawings. Review is intended only to assure conformance with design concept of the project and compliance with information given in Contract Documents.

1.15 SUBMITTAL CHECKLIST

A. This checklist is not necessarily complete. Contractor is responsible to submit all items and materials as specified in each section.

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	S.S. Injector piping and accessories				
	Piping – D.I.P.				
	Frames & Covers				
	Pumps and Controls				
	Control Panel Enclosure and Mounting Materials				
	Frost–Proof Hydrant				
	Roofing Materials				
	Chlorine tanks & pump				
	Generator				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
03 10 00 – Concrete Forming and Accessories					
	Exposed surface form-facing material				
	Concealed surface form-facing material				
	Forms for cylindrical columns				
	Pan-type forms				
	Waterstops				
	Form-release agent				
	Reinforcing Steel				
	Epoxy Repair Coating				
03 30 00 – Cast–In–Place Concrete					
	Portland cement				
	Fly ash				
	Slag Cement				
	Blended hydraulic cement				
	Silica fume				
	Performance-based hydraulic cement				
	Aggregates				
	Admixtures				
	Color pigments				
	Fiber reinforcement				
	Vapor retarders				
	Floor and slab treatments				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Liquid floor treatments				
	Curing materials				
	Joint fillers				
	Design Mix				
04 22 00 – Concrete Unit Masonry					
	Fabricated Flashing				
	Mortar and Grout				
	Lintels				
	Masonry Units				
	Reinforcing Steel				
	Ties and Anchors				
05 50 00 – Metal Fabrications					
	Fasteners				
	Shelf Angles				
	Ladders				
	Trim				
	Bollards				
	Cable Systems				
	Nosings and Thresholds				
06 10 00 – Rough Carpentry					
	Lumber				
	Treatment				
06 16 00 - Sheathing					
	Treatment				
06 17 53 – Shop-Fabricated Wood Trusses					
	Treatment				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Delegated Design Drawings				
09 90 00 – Painting and Coating					
	Product Data				
	Color Selection Charts and Samples				
	Painting Schedule				
	All Additional Submittals as Required by Section 09 90 00 - Painting				
09 96 00 – Coating Systems for Water Storage Tanks					
	Product Data				
	Color Selection Charts and Samples				
	Painting Schedule				
	All Additional Submittals as Required by Section				
31 00 00 – Earthwork					
	Borrow				
31 25 00 – Soil Erosion Control					
	Silt Fence				
31 37 00 – Rip–Rap					
	Stone				
	Sand–Cement Bag				
	Filter Fabric				
31 62 13 – Concrete Piles					
	Design Mix				
	Delegated Design				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Driving Equipment				
	Fabrication Details and Reinforcement				
	Record of Driving				
31 63 16 – Auger Cast Grout Piles					
	Design Mix				
	Delegated Design				
	Fabrication Details and Reinforcement				
	Augering and Grouting Procedures				
	Grout mix design				
	Pile Test Program Method				
32 11 23 – Aggregate Base Course					
	Aggregate				
	Prime				
32 12 16GA – Asphalt Paving					
	Tack Coat				
	Additives				
	Aggregates				
32 31 13 – Chain Link Fences and Gates					
	Fence Fabric				
	Posts				
	Hardware & Accessories				
	Layout Plan				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Finish				
	Gate Design and Hardware				
32 90 00 – Landscaping					
	Seed Mix – Temporary				
	Seed Mix – Permanent				
	Fertilizer				
	Lime				
	Hydromulch				
	Sod				
	Accessories				
	Sprig				
33 05 01.20 – FUSIBLE POLYVINYLCHLORIDE PIPE FOR INSTALLATION BY HORIZONTAL DIRECTIONAL DRILLING (HDD)					
	FPVC				
	Fusion Joints				
	Connections				
	Drilling Equipment				
33 10 00 – Water Distribution System					
	PVC Pipe – 4"Ø and Larger				
	PVC Pipe – Smaller than 4"Ø				
	D.I. Pipe				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Tubing for Service Lateral				
	Fittings – PVC				
	Fittings – Compact D.I.				
	Gate Valve				
	Butterfly Valve				
	Weighted Flap Valve				
	Fire Hydrants				
	Tapping Sleeves				
	Curb Stops				
	Backflow Preventors				
	Metal Detector Tape				
	Tracer Wire				
	Air Release Valves & Combination Valves				
	PE Encasement				
	Pressure Gauge				
	Check Valve				
	Wall Castings				
	Flexible Couplings				
	Expansion Joints				
	Supports				
	Flow Meters				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Entire Chlorine System				
	Phosphate Mix				
	Storage Tank				
	Phosphate Pump				
	Manholes				
	Spigot				
	Casing & Spacers				
	Chain Hoist				
	Altitude Valve				
33 11 00 – Well Head Piping					
	Pressure Transducer and Housing				
33 12 23 – Distribution Pump Station					
	Pumps				
	Miscellaneous Materials				
	Plaque Mockup				
33 16 13 – Composite Elevated Water Storage Tank					
	Tank Design				
	Passive Mixing System				
	Door Hardware				
	Paint System				
	Cathodic Protection				
33 16 13 – Composite Elevated Water Storage Tank					

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Tank Design				
	Passive Mixing System				
	Door Hardware				
	Paint System				
	Cathodic Protection				
33 16 13 – Composite Elevated Water Storage Tank					
	Tank Design				
	Aerator				
	Ladder Systems & Fall Protection				
	Paint System				
33 40 00 – Storm Drainage Utilities					
	Reinforced Concrete Pipe				
	Precast Structure				
	Polyethylene Pipe				
	Soils & Aggregates				

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

INDEX TO

SECTION 01 40 00

QUALITY REQUIREMENTS

SECTION 01 40 00

QUAILITY REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Quality Control Requirements.

2. Administrative and procedural requirements for quality assurance and quality control.

B. Related Sections:

1. Section 01 33 00 – Submittal Procedures
2. Section 01 45 00 – Quality Control
3. Section 01 45 23 – Testing and Inspection Services
4. Divisions 00, 01, and 02 through 50 Sections

1.2 QUALITY CONTROL REQUIREMENTS

A. General: The Contractor shall establish a system of inspections and tests of his work and that of his subcontractors to insure that all applicable requirements of the specifications are met.

1. The Contractor shall be diligent to insure that the quality of workmanship is satisfactory, that dimensional requirements are met, that defective materials are not used and that all required control and laboratory testing procedures are effected.

2. Where specific testing procedures are not stipulated, the Contractor shall establish and conduct a test procedure to insure adherence to specified quality.

3. The Contractor shall make an initial inspection of each phase of work as soon as a representative portion has been completed, and the Contractor shall make daily follow-up inspections, to insure that an acceptable quality of work is established and maintained.

4. The Contractor shall perform a pre-final inspection and work off all punch list items prior to Engineer's or Owner's inspection(s).

1.3 DEFINITIONS

A. Conventional Inspections: Inspections, not specifically required by Code, which

are considered essential to the proper performance of the building systems.

B. Inspections: Evaluation of systems, primarily requiring observation and engineering judgment.

C. Quality-Control Services: Conventional inspections, special inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. Services do not include contract enforcement activities performed by Engineer.

D. Special Inspections: Inspections, required by Code, which monitor the quality of materials and workmanship critical to the structural integrity of the building.

E. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

F. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

G. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

H. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

I. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction and the Owner, to establish product performance and compliance with industry standards.

J. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

K. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

L. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

M. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

    1. Using a term such as "carpentry" does not imply that certain construction

activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

N. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 QUALITY ASSURANCE AND CONTROL SERVICES REQUIREMENTS

A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

B. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner, the Contract Documents or authorities having jurisdiction are not limited by provisions of this Section.

1.5 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement, unless directed otherwise by the Owner. Refer uncertainties and requirements that are different, but apparently equal, to the Engineer, in writing, for the Owner’s decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer, in writing, for the Owner’s decision before proceeding.

1.6 SUBMITTALS

See Section 01 33 00 – Submittal Procedures.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

    1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

    2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

G. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

    1. Build mockups in location and of size indicated or, if not indicated, as directed by Engineer.

    2. Notify Engineer seven days in advance of dates and times when mockups

will be constructed.

3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Engineer's approval of mockups before starting work, fabrication, or construction.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

6. Demolish and remove mockups when directed, unless otherwise indicated.

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Payment for these services will be made from allowances, as authorized by the Owner.

3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Modification.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction, at no additional expense to the Owner or Engineer. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are not indicated as Owner's responsibility, engage a qualified testing agency to perform these quality-control services.

2. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies and Engineer at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

4. For all quality-control services that are not indicated as Owner's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspecting requested by Contractor and not required by the

Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 - Submittal Procedures.

D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer, Owner, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field curing of test samples.

5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.

7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.9 STANDARD AND INDUSTRY SPECIFICATIONS

A. Any material or operation specified by reference to the published specification of a manufacturer, The American Society for Testing and Materials (ASTM), The American Standards Association (ASA), Federal Specifications, or other published standard shall comply with the requirements of the current specification or standard listed. Should there be a discrepancy between the referenced specification and the contract documents the latter shall govern unless written interpretation is obtained from the Owner. Should there be discrepancies among referenced specifications or standards, the more stringent requirements shall govern.

B. The Contractor shall, if requested, furnish an affidavit from the manufacturer(s) certifying that the materials or products being furnished meet the requirements specified. Such certification, however, shall not relieve the Contractor from the responsibility of complying with other requirements of the contract documents.

1.10 MANUFACTURER'S DIRECTIONS

A. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturers unless herein specified to the contrary. Should there be a discrepancy between an installation as required by the drawings and/or specifications and the manufacturer's directions and/or recommendations, such discrepancy shall be brought to the attention of the Engineer and shall be resolved before the work may proceed.

1.11 ACCEPTED MATERIAL REQUIREMENTS

A. In the event the architectural, plumbing, mechanical and/or electrical requirements of any "ACCEPTER" material is different from that specified and/or as indicated on the drawings, any additional cost involved shall be the responsibility

of the Contractor. No extra cost to the Owner or Engineer will be allowed because of the use of such materials.

1.12 USE OF FOREIGN MATERIALS

A. The Contractor shall agree to use in the execution of this contract only materials, supplies, and products manufactured, mined, processed or otherwise produced in accordance with the Buy American Act (41 USC 10a-10d).

1.13 EXAMINATION OF SURFACES AND/OR CONDITIONS

A. The Contractor shall examine all surfaces on which, or against which, their work is to be applied and shall notify the Engineer in writing of any defects the Contractor may discover which, in the Contractor's opinion, would be detrimental to the proper installation or operation of the Contractor's products. Commencing of work by the Contractor denotes acceptance by Contractor of all surfaces and conditions affecting Contractor's work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

    1. Comply with the Contract Document requirements

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

INDEX TO

SECTION 01 45 00

QUALITY CONTROL

SECTION 01 45 00

QUALITY CONTROL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Quality assurance – control of installation.

B. Tolerances

C. References and standards.

D. Testing laboratory services.

E. Manufacturer's field services.

1.02 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures: Submission of manufacturer's instructions and certificates.

B. Individual Technical Specification sections: quality assurance requirements, submittals and testing procedures.

1.03 QUALITY ASSURANCE – CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturer's instructions, including each step–in sequence.

C. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.04 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturer's tolerances. Should manufacturer's tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust products to appropriate dimensions and positions before securing in place.

D. Accessible routes shall not exceed maximum ADA allowable slopes.

1.05 REFERENCES AND STANDARDS

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes, or stated in the Specifications or Drawings.

B. Conform to current versions of referenced standards, except where a specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. The contractual relationships, duties, and/or responsibilities of the parties under Contract with the Owner, including those of the Engineer, shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING SERVICES

A. Contractor will appoint and employ services of an independent firm to perform testing. Contractor shall pay for testing services required by the specifications, except where stated otherwise for Special Inspections.

B. The independent firm will perform tests and other services specified in individual specification sections and as required by the Owner.

C. Testing and source quality control may occur on or off the project site. Perform off–site testing if required by the Specifications, Drawings, or Owner.

D. Copies of the reports will be submitted by the independent firm to the Engineer and Contractor. Reports shall indicate observations and results of tests and shall indicate compliance or non–compliance with applicable requirements.

E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

1. Notify Engineer and independent firm 48 hours prior to expected time for requiring sampling, testing and observation services, unless noted otherwise in the Specifications or Drawings.

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

F. Testing does not relieve Contractor to perform Work to contract requirements.

G. Re–testing required because of non–conformance to specified requirements shall be performed by the same independent firm under the direction of the Engineer. Payment for re–testing shall be made by the Contractor.

1.07 MANUFACTURER'S FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, observe conditions of surfaces and installations, monitor quality of workmanship, provide training and instructions to operators, and provide start–up, testing, adjustment, and balancing of equipment, as applicable.

B. If a manufacturer's representative observes faulty practices on site related to or affecting their product, they shall report it immediately to the Contractor and Owner.

C. Observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions shall be documented in writing and provided to the Contractor and Engineer.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of the correct characteristics, and in the correct locations.

3.02 PREPARATION

A. Prepare surfaces in accordance with the requirements of the individual technical Specification sections.

END OF SECTION

INDEX TO

SECTION 01 45 23

TESTING AND INSPECTING SERVICES

SECTION 01 45 23

TESTING AND INSPECTING SERVICES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Selection and payment.

B. Contractor submittals.

C. Testing agency responsibilities.

D. Testing agency reports.

E. Limits on testing authority.

F. Contractor responsibilities.

G. Schedule of tests.

1.2 RELATED SECTIONS

A. Testing and approvals required by public authorities.

B. Section 01 33 00 – Submittal Procedures: Manufacturer's certificates.

C. Section 01 77 00 – Closeout Procedures: Project record documents.

1.3 REFERENCES (LATEST REVISION)

A. ASTM C 802 – Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction Materials.

B. ASTM C 1077 – Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

C. ASTM C 1093 – Practice for Accreditation of Testing Agencies for Masonry.

D. ASTM D 3740 – Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

E. ASTM D 4561 – Practice for Quality Control Systems for Organizations Producing and Applying Bituminous Paving Materials.

F. ASTM E 329 – Specification for Agencies Engaged in Construction Inspection and/or Testing.

G. ASTM E 543 – Practice for Agencies Performing Nondestructive Testing.

H. ASTM E 548 – Guide for General Criteria Used for Evaluating Laboratory Competence.

I. ASTM E 699 – Practice for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating of Building Components.

1.4 SELECTION AND PAYMENT

A. Employment and payment by Contractor for services of an independent testing agency or laboratory to perform specified testing.

B. Employment of testing agency or laboratory in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. For Special Inspections outlined in the Contract Documents, Contractor shall be paid through the Allowance "Special Inspections". No payment shall be made without express written consent of Owner. Documentation of special inspection and testing costs shall be submitted for reimbursement through the Allowance at cost plus markup per General Conditions Section 11.07.C.

D. Contractor shall submit all subcontractors' companies, personnel, and qualifications proposed to perform the special inspections and testing for acceptance by Owner.

E. All other testing and inspections shall be the responsibility of the Contractor at no additional cost.

1.5 QUALITY ASSURANCE

A. Comply with requirements of practices listed in paragraph 1.3.

B. Laboratory: Authorized to operate in State in which project is located.

C. Laboratory Staff: Maintain a full-time registered Engineer on staff to review services.

D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 CONTRACTOR SUBMITTALS

A. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full-time registered Engineer and responsible officer.

B. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.7 TESTING AGENCY RESPONSIBILITIES

A. Test samples of mixes submitted by Contractor.

B. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.

C. Perform specified sampling and testing of products in accordance with specified standards.

D. Ascertain compliance of materials and mixes with requirements of Contract Documents.

E. Promptly notify Engineer and Contractor of observed irregularities or non–conformance of Work or products.

F. Perform additional tests required by Engineer.

G. Attend preconstruction meetings and progress meetings.

1.8 TESTING AGENCY REPORTS

A. After each test, promptly submit three (3) copies of report to Engineer and to Contractor.

B. Include:

1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in the Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

C. When requested by Engineer, provide interpretation of test results.

1.9 LIMITS ON TESTING AUTHORITY

A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

B. Agency or laboratory may not approve or accept any portion of the Work.

C. Agency or laboratory may not assume any duties of Contractor.

D. Agency or laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

A. Deliver to agency or laboratory at designated location, adequate samples of materials proposed to be used requiring testing, along with proposed mix designs.

B. Cooperate with laboratory personnel and provide access to the Work and to manufacturer's facilities.

C. Provide incidental labor and facilities:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the site or at source of products to be tested.
3. To facilitate tests.
4. To provide storage and curing of test samples.

D. Notify Engineer and laboratory 48 hours prior to expected time for operations requiring testing services.

E. Employ services of an independent qualified testing laboratory and pay for additional samples and tests required by Contractor beyond specified requirements.

1.11 SCHEDULE OF TESTS

Section	Test	Frequency	Date	Performed By	Notes
03 10 00 – Concrete Forming and Accessories					
	Mock-Ups	Build panel approximately 100 sq. ft. in the location indicated or, if not indicated, as directed by Architect.			
03 20 00 – Concrete Reinforcing					
	Mill Test Analysis	Per ASTM A706/A706M			
03 30 00 – Cast-In-Place Concrete					
	Mix Designs	1 per mix design			
	Compressive Strength	4 test cylinders for every 50 cubic yards or less of each mix design placed daily			
		1 cylinder broken at 7 days			
		2 cylinders broken at 28 days			
	Slump	1 test for each set of cylinders taken			
	Slump	1 test per each set of cylinders			
	Air Content	1 test per each set of cylinders			
	Temperature	1 test per each set of cylinders			
04 22 00 – Concrete Unit Masonry					
	Concrete Masonry Unit	One set of tests for each 5,000 sq. ft.			
	Mortar Aggregate Ratio	One set of tests for each 5,000 sq. ft.			
	Mortar	One set of tests for each 5,000 sq. ft.			
	Grout	One set of tests for each 5,000 sq. ft.			
	Prism	One set of tests for each 5,000 sq. ft.			
06 16 00 – Sheathing					

	Mock-Up	Per manufacturer's recommendations			
	Air Leakage Location	Per ASTM E1186 and manufacturer's recommendations			
	Air Leakage Volume	Per ASTM E783 OR E2357 and manufacturer's recommendations			
09 96 00 – Coating Systems for Water Storage Tanks					
	Mock–Ups (6 ft x 6 ft)	Prepare 10 ft x 10 ft mock–ups for each coating system specified using the same materials, tools, equipment, and procedures intended for actual surface preparation and application (include mock–up of lettering/logo – 1/3 scale)			
	Holiday Inspection	Check interior and exterior surfaces for paint holidays (see Section 09 96 00)			
31 00 00 – Earthwork					
	Compaction				
	Unpaved	1 test per horizontal layer per 10,000 sf of fill area			
	Paved	1 test per horizontal layer per 5,000 sf of subgrade			
	Building Pad	1 test per horizontal layer per 1,500 sf of fill area			
	Curb & gutter	1 test per 300 lf			
	Proof Rolling	As necessary			
32 11 23 – Aggregate Base Course					
	Base Density	1 test per 5,000 sf			
33 10 00 – Water Distribution System					

	Hydrostatic & Leakage	1.5 times the working pressure (no less than 150 psi). Conducted for 2 hours with maintained pressure of 150 psi (200 psi on fire main)			
	Bacteriological Samples	2 taken 24 hours apart after disinfection			
	Compaction				
	Traffic Areas	1 per 100 lf or less for each 4 ft. of depth			
	Non–Traffic Areas	1 per 500 lf or less for each 4 ft. of depth			
	Fire Flow	1 per permit			
33 11 00 – Well Head Piping					
	Disinfection	See Section 33 11 00			
33 16 13 – Composite Elevated Water Storage Tank					
	Mill and Shop Testing	In accordance with Section 11 of AWWA D100			
	X–ray Testing of Welds	In accordance with AWWA D100			
	Disinfection	Water samples collected in sterilized containers and tested in accordance with Section 7 of AWWA C652 (see Section 33 16 13)			
33 40 00 – Storm Drainage Utilities					
	Compaction				
	Haunching and Initial	1 per 100 lf, min 1 per run of pipe			
	Final Traffic Areas	1 per 100 lf or less for each 4 ft. of depth			
	Final Non–Traffic	1 per 500 lf or less for each 6 ft. of depth			

**Note – this list may not be exhaustive of all tests listed in contract specifications or drawings. Contractor is not exempt from local, State, Federal, or specification book-required tests not listed in this section.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

INDEX TO

SECTION 01 55 26

TRAFFIC CONTROL

SECTION 01 55 26

TRAFFIC CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section covers furnishing, installation, and maintenance of all traffic control devices, portable signal equipment, warning signs, and temporary traffic lanes used during construction of the project.

1.2 RESPONSIBILITY

A. The Contractor shall furnish, install, and maintain all necessary automated signals, barricades, concrete traffic barriers, warning signs, traffic barriers, traffic lanes, and other protective devices. Ownership of these temporary warning devices shall remain with the Contractor provided devices are removed promptly after completion and acceptance of work to which devices pertain. If such warning devices are left in place for more than 30 days after specified time for removal, Owner shall have the right to remove such devices and to claim possession thereof.

1.3 MEASUREMENT AND PAYMENT

A. See Section 01 22 00 for measurement and payment

PART 2 – PRODUCTS

2.1 MATERIALS

A. All barricades, signs, and traffic control signal devices shall conform to requirements of the current Georgia Manual on Uniform Traffic Control Devices except as may be modified in these project specifications.

B. Portable traffic control signal devices, barricades, signs, and other Control Devices shall be either new or in acceptable condition when first erected on Project and shall remain in acceptable condition throughout the construction period.

C. All signs shall have a black legend and border on an orange reflectorized background and will be a minimum engineering grade reflective.

PART 3 – EXECUTION

3.1 ERECTION

A. Prior to commencement of any actual construction on the project, Contractor shall erect appropriate advance warning signs and place concrete traffic barriers where necessary. Subsequently, as construction progresses and shifts from one side of road to the other, temporary lanes must be installed to provide continuous two-way traffic and bike thoroughfare. All appropriate signs and traffic control devices pertinent to the work shall be erected ahead of construction site to advise and warn travelling public of activity and any necessary detours.

3.2 DELAYS TO TRAFFIC

A. Except in rare and unusual circumstances, two–way traffic shall be maintained at all times by temporary and/or permanent roads. There are to be no traffic delays during the hours between 7 AM – 10 AM and 4 PM – 10 PM. Between the hours of 10 AM and 4 PM the maximum delay is to be 15–minutes.

B. When traffic is halted temporarily due to transition procedures including the ingress and egress of construction vehicles, Contractor shall provide necessary flagging personnel with proper equipment and clothing to hold such traffic.

C. If Contractor's proposed traffic control plan involves more than occasional disruption to alternating one way traffic through the work, then temporary, signalized control equipment will be required.

3.3 TEMPORARY TRAFFIC LANES

A. Two–lane traffic shall be maintained at all times unless prior written permission has been given and all necessary flagging personnel and/or signage has been installed. Temporary lane line stripes shall be applied to the detour paving, as agreed to by Engineer and Owner's representative. The no–passing double center–line stripes shall be yellow. Such stripes shall be a temporary, degradable, reflectorized tape strip. All temporary striping shall be maintained throughout the period traffic control is needed.

B. Contractor is responsible for installation and removal of all temporary roads and trails throughout the construction process. These detour roads are to be in accordance with the Pavement Specifications herein.

3.4 SIGNS AND BARRICADES

A. Contractor shall provide a detailed map showing location and verbiage of all traffic control signs and methods for the project. All critical warning signs for the project will be a minimum of engineering grade reflective material and include appropriate flashing lights.

B. Appropriate Safety Barricades shall be installed between bicycle trails, sidewalks, and the temporary traffic lanes. These barricades shall be impact resistant for passenger vehicles with a travelling speed of 40 mph.

1. Advance warning signs: These signs shall be placed approximately 500 feet in advance of the construction site and detour on each approach to the construction area with subsequent warning signs every 250 feet, until

construction site is met.

2. Barricades: While detour is open to traffic, a line of concrete traffic barricades shall be placed across the closed roadway to channelize traffic onto detour. They shall be spaced across the blocked roadway end to end so no vehicle will be able to pass between any two adjacent barricades.

3. Barriers: Shall be wooden having a minimum of three horizontal 6 inch rails spaced 20 inches on center. Markings for barrier rails shall be 6 inches wide alternate orange and white reflectorized stripes sloping downward at 45 degrees in the direction traffic is to pass.

   During hours of darkness, the Contractor shall place and maintain flashing warning lights on tops of all barriers.

4. Direction Arrow Signs: At each change in traffic direction along the detour, Contractor shall install a sign with an arrow indicating change in traffic direction. This sign is to be located across the pavement from and facing on–coming traffic.

5. End Construction Sign: This sign shall be 60 inches x 24 inches and erected approximately 200 feet beyond end of construction area on the right–hand side.

END OF SECTION 01 55 26

INDEX TO

SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

PART 1 – GENERAL

1.01 QUALITY ASSURANCE

A. Contractor shall provide at least one person who shall be present at all times during planting and pruning. Individual shall be thoroughly familiar with types of plants and trees involved and shall be responsible for directing the digging, cutting, planting, and maintenance of designated plant and tree materials.

B. Qualifications: Repair of tree damage shall be completed or supervised by a tree surgeon who is a member of the National Arborist Association.

C. Pre–Work Conference – Review on site with the Owner.

D. **Trees to be removed will be marked with green flagging. Trees to remain will be marked with red flagging. Trees designated as "SPECIMEN" will be marked with yellow flagging.**

PART 2 – PRODUCTS

2.01 MATERIALS

A. Provide tree protection materials, as detailed on the construction drawings.

PART 3 – EXECUTION

3.01 PROTECTION OF SPECIMEN TREES

A. Any irreparable damage to roots, trunk or bark, or any unauthorized cutting or pruning of limbs to trees designated by the Owner as "specimen" will result in a fine. This fine shall be levied through the Application for Payment as retainage and shall be used to supplement "specimen" with tree of similar value and to perform extensive "state of the art" tree surgery in an attempt to save the tree.

3.02 METHODS OF PROTECTION

A. Use the following method to protect specimen trees. Actual determination of extent and combination of methods shall be determined on site.

B. Temporary Fence Enclosures: Construct protective fencing where indicated on the construction drawings. Protective fencing shall be installed a minimum of three feet beyond the dripline. No grading, trenching, pruning, or storage of materials shall be allowed inside this area.

3.03 REPAIR OF TREES INJURED DURING CONSTRUCTION

A. Contractor shall:

1. Repair damaged trees promptly to prevent progressive deterioration caused by damage.

2. Repair to trees damaged during construction according to standard arborcultural techniques recognized by International Society of Arborculture.

3. Remove trees damaged beyond satisfactory repair as determined by Owner. Refer to "FINES" and "MITIGATION" in this section for loss of specimen trees.

4. Temporarily cover roots exposed during construction with wet burlap to prevent roots from drying out. Cover roots with earth as soon as possible.

5. Roots Cut During Construction: Coat roots 1 1/2 inches diameter or larger with antiseptic paint.

3.04 FINES

A. Fine values for designated **"SPECIMEN"** vegetation shall be determined by the following:

Caliper	Fine
1 inch – 2 inches	$ 150.00
2 inches – 3 inches	$ 200.00
3 inches – 4 inches	$ 250.00
4 inches – 5 inches	$ 400.00
5 inches – 6 inches	$ 500.00
6 inches – 7 inches	$ 600.00
7 inches – 8 inches	$ 750.00
8 inches – 11 inches	$ 1,500.00
12 inches – 20 inches	$ 2,000.00
21 inches & larger	$ 2,500.00

3.05 MITIGATION

A. Mitigation shall be in the form of tree transplantation. Plant materials shall be from off–site (for smaller sites) or from remote areas on site. Trees shall be comparable in size, form, and species to lost "specimen" tree. Tree species, size, and planting locations shall be approved by the Owner.

END OF SECTION

INDEX TO

SECTION 01 75 15

EQUIPMENT START UP

SECTION 01 75 15

EQUIPMENT START UP

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall:

1. Coordinate a schedule for start-up of various equipment and systems.

2. Notify the Engineer ten working days prior to start-up of each item or station.

3. Make sure all piping, wells, equipment, etc. are free of construction debris prior to starting pumps and other equipment.

4. Verify that each piece of equipment or system had been checked for proper lubrication, drive rotation, belt tension, control sequence, blockage, or other conditions which may cause damage.

5. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

6. Verify wiring and support components for equipment are complete and tested.

7. Execute start-up under supervision of responsible Manufacturer's service technician, Utility representative, Engineer, and contractor's personnel in accordance with manufacturer's instructions and in accordance the Technical Specifications.

8. Submit a written report from the equipment service technician that all equipment or system had been properly installed and is functioning correctly.

1.02 DEMONSTRATION AND INSTRUCTION

A. In addition to the requirements of Section 1.01 above, the Contractor shall:

1. Demonstrate operation and maintenance of the system to the engineer and the Owner prior to final acceptance. The Contractor shall provide the equipment manufacturer's representative for a minimum of one day of training to Utility personnel for each station. The Contractor shall coordinate and schedule a demonstration of the system with the Owner and the engineer according to Technical Specifications.

2. Utilize operation and maintenance manuals as basis for instruction. Review contents on manual with Utility personnel in detail to explain all aspects of operation and maintenance.

3. Demonstrate start-up, operation, control adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.

4. Prepare and insert additional data operations and maintenance manuals when the need for additional data becomes apparent during instruction.

END OF SECTION

INDEX TO

SECTION 01 77 00

CLOSEOUT PROCEDURES

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.

B. Project record documents.

C. Warranties and bonds.

D. Operation and maintenance data.

E. Maintenance services.

1.02 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures

B. Section 01 78 36 - Warranties.

C. Section 01 78 33 - Bonds.

1.03 SUBSTANTIAL COMPLETION PROCEDURES

A. In addition to the requirements in the General Conditions, contractors shall follow these procedures.

1. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

2. Submittals Prior to Substantial Completion: Complete the following a minimum of ten days prior to requesting review for determining date of Substantial Completion. List items below that are incomplete at time of request.

a. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities.

b. Submit closeout submittals including but not limited to project record documents, operation and maintenance manuals, final completion construction photographic documentation, test results, and similar final record information.

c. Submit maintenance material submittals specified in individual section, including tools, spare parts, extra materials, and similar

items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.

1. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.

3. Submit test, adjust, and balance records.

4. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

B. Procedures Prior to Substantial Completion: Complete the following a minimum of ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.

2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.

5. Engage responsible manufacturer to Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in individual equipment specifications.

6. Advise Owner of changeover in electric and other utilities.

7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

9. Remove labels that are not permanent labels.

10. Complete final cleaning requirements, including touch up painting.

11. Touch up and otherwise repair and restore marred exposed finished to eliminate visual defects.

1.04 CLOSEOUT PROCEDURES

A. Submit written verification that the Contract Documents had been reviewed, Work has been observed at appropriate times, and the Work is complete in accordance with Contract Documents and ready for Engineer's review. Request in writing that the Engineer review the work. Then address all punch lists or discrepancy items developed from Engineer, Owner, and State's review.

B. Submit a draft to Engineer of all closeout documents for review at least 15 days prior to substantial completion.

C. Submit project record documents (see item 1.05).

D. Provide closeout submittals to Engineer (see item 1.06).

E. Provide any other submittals to Engineer required by governing or other authorities.

F. Provide Final Adjustment of Accounts (see item 1.07).

G. Provide maintenance services indicated in specification sections for one year from the date of substantial completion.

H. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

I. Site and building shall be cleaned per specifications.

1.05 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other modifications to the Contract.

5. Reviewed Shop Drawings, Product Data, and Samples.

6. Manufacturer's instructions for assembly, installation, maintenance, and adjustments.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Equipment Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates utilized.

3. Changes made by Addenda and modifications.

F. Project Record Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

3. Where proposed and existing utilities cross, the Contractor shall measure and record the horizontal location and vertical separation between each crossing. Separation shall be measured between exteriors and pipes.

4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

6. An as-built of the construction with spot elevations and finished contours of the site plan and all storm pipes/inlets.

7. An as-built of the sanitary sewer, water and storm drainage systems.

8. Record drawings for building, conduits, structures, and electrical, power, communications and related.

9. Piling data locations, tip and cut-off elevations and driving records.

10. Building MEP and other building features (with changes).

G. Record drawing shall be prepared according to these conditions: The Contractor shall keep accurate, legible records of the locations, types, and sizes of sanitary lines, service laterals, manholes, cleanouts, water lines, fittings, valves, hydrants, drainage pipes, drainage structures, and other related work performed under this project. Where proposed and existing utilities cross, the Contractor shall measure and record the horizontal location and vertical separation between each crossing. Separation shall be measured between exteriors of pipes. On a set of project prints provided by the Owner, the Contractor shall prepare a set of "record" drawings from the data stated above. The horizontal locations of all portions of items installed on this project shall be accurately tied down to features that are physical and visible, such as property corner markers and permanent type structures. Invert elevations of all manholes, storm sewers and structures, sanitary sewers, and lift stations shall be clearly indicated. These "record" drawings shall be kept clean and dry and maintained in a current state

with the progress of the work. If at any time, a copy of this plan or portion of it is requested by the Owner, such copy shall be made available within 24 hours after the request is made.

Before final acceptance of the completed installation and final payment by the Owner, the Contractor shall deliver to the Engineer, three sets of "Record" Drawings accurately depicting the horizontal and vertical as–built data described in the above paragraph. "Record" drawings for the items installed on this project shall be certified by a licensed surveyor, other than Thomas & Hutton, registered in State of Georgia. The size of the drawings shall be 24" x 36". The "Record" drawings shall have a coordinate system based on the Georgia State Plane Coordinate System, East Zone, North American Datum of 1983 (NAD83). Elevations shall be based on the North American Vertical Datum of 1988 (NAVD 88). All measurements and coordinates shown shall use the U.S. Survey flood definition. Coordinates shall be shown on all drainage storm manholes/boxes and all other related work performed under this contract, including an as built condition of all underground piping, manholes, valve boxes, storm drainage certified by a registered surveyor with spot elevations and finished 1-foot contours. Vertical data including but not limited to, structure and manhole frame and inverts, pipe inverts, control levels, bottom, site grading, and as-built grading shall be shown. In addition to the "Record" drawings, Contractor shall deliver to Engineer electronic AutoCAD (v. 14 or later) files of all the data described above on a CD-ROM.

H. Deliver final project record drawing files to Engineer in an electronic AutoCAD (v.14 or later) and three paper sets. Find project record drawing shall include Engineer comments and shall conform to regulatory agency requirements.

I. Submit final documents to Engineer at least 15 days prior to claim for final Application for Payment.

1.06 CONTRACTOR'S CLOSEOUT SUBMITTAL TO ENGINEER

A. Closure of the construction contract, including final payment to the Contractor, requires the following:

1. Contractor's submission to the Engineer of the following:

a. Project record drawings.

b. An affidavit, in the form of the AIA G706, that wages, bills for materials and equipment, and other indebtedness connected with the work have been paid (Contractor's affidavit of payment & debt and claims);

c. A certificate in the form of AIA G715 (Accord for Certificate of Insurance) issued by an authorized representative of the Contractor's insurance company certifying completed project insurance coverage as required by the contract documents.

d. A statement that the Contractor knows of no reason that the completed project insurance will not be renewable to cover the period required by the Contract Documents;

e. Consent of surety, if any, to final payment, in the form of AIA G707 (Consent of Surety to Final Payment);

f. Other information required by the Owner establishing the Contractor's payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims and security interests arising out of the contract, all in the forms as designated by the Owner;

g. Inspection reports that may not be a part of the record documents;

h. All warranties and quantities;

i. O&M Manuals;

j. Training Manuals;

k. Final Adjustment of Accounts; and

l. A list of all claims against Owner that the Contractor believes is unsettled.

m. Other documents required by the Owner and State guidelines and requirements,

1.07 FINAL ADJUSTMENT OF ACCOUNT

A. Submit a final statement of accounting to the Engineer.

B. Statement shall reflect all adjustments to the contract sum:

1. The original contract sums

2. Additions and deductions resulting from:

a. Previous change orders;

b. Unit prices;

c. Penalties and bonuses;

d. Deductions for liquidated damage; and

e. Other adjustments.

3. Total contract sum, as adjusted.

4. Previous payments.

5. Remaining sum due.

1.08 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.09 OPERATION AND MAINTENANCE DATA

A. Submit as directed in Section 01 78 23 Operating and Maintenance Information.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.

B. Deliver to project site and place in location as directed by Owner; obtain receipt prior to final payment.

C. Crate in containers designed for prolonged storage suitable for handling with hoisting equipment containers.

D. Stencil contents on containers

1.11 WARRANTIES AND BONDS

A. Provide duplicate notarized copies and a PDF of each.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.12 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in specification sections for 1 year from the date of Substantial Completion.

B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

1.13 FINAL CLEANING

A. Execute final cleanup prior to final project acceptance.

B. Remove waste and surplus materials, rubbish, and construction facilities from the site.

C. Clean all exterior paved surfaces, establish vegetation or ground cover on all disturbed areas.

D. Clean all sight-exposed interior and exterior surfaces and work areas.

E. Clean all windows, glasses, floors, monitors, cabinets, controls, etc.

F. Clean debris and sediment from all new storm pipes and structures.

G. Repair all cracked or damaged curbs, sidewalks and concrete areas. If the crack is irregular or goes through the full depth of the concrete, remove the damaged section and replace.

H. Removal all soil and other debris from the new storm system, curb, and paved areas.

I. Comply with the requirements of Section 01 77 01.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO

SECTION 01 77 01

CLEANING

SECTION 01 77 01

CLEANING

PART 1 – GENERAL

1.01 RELATED SECTIONS

A. Documents affecting the work of this Section include, but are not necessarily limited to, the General Conditions, the Supplementary Conditions, and other Sections in Division 1 of these Specifications.

B. In addition to standard described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.02 DESCRIPTION OF WORK INCLUDED

A. Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

B. Execute cleaning during progress of the work and at completion of the work.

1.03 QUALITY ASSURANCE

A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

C. Conduct cleaning and disposal operations to comply with all Federal, State, and local codes, ordinances, regulations, and anti-pollution laws.

PART 2 – PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

B. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

C. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

D. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

2.02 COMPATIBILITY

A. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 – EXECUTION

3.01 PROGRESS CLEANING

A. General

1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing protection of materials.

2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of the work.

3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.

4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the environment.

5. Execute periodic cleaning to keep the work, the site and adjacent properties free from accumulation of waste materials, rubbish, and wind-blow debris, resulting from construction operations.

B. Site

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.

2. Weekly, and more often it necessary, inspect all arrangements of materials stored on the site. Restack, tidy, or otherwise service arrangements to meet the requirements of paragraph 3.01, part A, Section 1.

3. Maintain the site in a neat and orderly condition at all times.

4. Provide onsite containers for the collection of waste materials, debris and rubbish. Empty as necessary to prevent overflow and nuisance odor.

C. Structures

1. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.

2. Weekly, and more often if necessary, sweep interior spaces clean ("Clean", for the purpose of this subparagraph shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held broom).

3. As required preparatory to installation of succeeding materials, clean the structures of pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

4. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which materials are installed *("Clean", for the purpose of this paragraph, shall be interpreted as meaning free from foreign material which, in the opinion of the Architect or Engineer, may be injurious to the finish floor material)*.

3.02 DUST CONTROL

A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

C. Control dust on the site through the use of watering trucks and other accepted means.

3.03 FINAL CLEANING

A. Execute final cleanup prior to final project acceptance.

B. "Clean", for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

C. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.01.

D. Site

1. Clean project site, yard and grounds disturbed by construction activities. Unless otherwise specifically directed by the Architect or Engineer, broom clean paved areas on the site and public paved areas adjacent to the site and rake clean other surfaces of the grounds. Remove stains, spills, and other foreign deposits.

2. Completely remove resultant debris.

E. Structures

1. Exterior

a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.

b. Remove all traces of splashed materials from adjacent surfaces.

c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.

d. In the event of stubborn stains not removable with water, the Architect or Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.

2. Interior

a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges and other foreign matter.

b. Remove all traces of splashed material from adjacent surfaces.

c. Remove paint droppings, spots, stains and dirt from finished surfaces.

3. Glass

a. Clean inside and outside

4. Polished surfaces

a. To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.

5. Replace disposable air filters.

6. Clean ducts, blowers, coil units and HVAC.

F. Remove waste and surplus materials, rubbish, and construction facilities from the site.

G. Clean all exterior paved surfaces, establish vegetation or ground cover on all disturbed areas.

H. Clean all sight-exposed interior and exterior surfaces and work areas.

I. Clean debris and sediment from all new storm pipes and structures.

J. Repair all cracked or damaged curbs. If the crack is irregular or goes through the full depth of the curb, remove the damaged section and replace.

K. Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

L. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations immediately prior to Occupancy for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Clean exposed exterior and interior finishes to a dirt-free condition, free of grease, dust, stains, films, fingerprints, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

g. Sweep concrete floors broom clean in unoccupied spaces.

h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

i. Power scrub and power buff resilient flooring surfaces, tile, and fluid-applied flooring.

j. Clean transparent materials, including mirrors and glass in doors windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Wipe surfaces of mechanical and electrical equipment, elevator equipment where applicable, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection. Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.

p. Clean lighting fixtures, lamps, globes, and reflectors to functions with full efficiency.

q. Leave Project clean and ready for occupancy.

M. Schedule final cleaning as approved by the Architect or Engineer to enable the Owner to accept a completely clean work.

N. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas to verify that the entire work is clean.

3.04 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion and final cleaning.

B. Repair of remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repair or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.

a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

3.05 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Architect or Engineer in accordance with the General Conditions of the Contract.

END OF SECTION

INDEX TO

SECTION 01 78 23

OPERATION AND MAINTENANCE INFORMATION

SECTION 01 78 23

OPERATING AND MAINTENANCE INFORMATION

PART 1 – GENERAL

1.01 SCOPE

A. Operation and maintenance (O&M) instructions shall be provided in accordance with this section and as required in the technical sections of this project manual. O&M information shall be provided for each maintainable piece of equipment, equipment assembly or subassembly, and material provided or modified under this contract.

B. O&M instructions must be submitted and accepted before on-site training may start.

PART 2 – INFORMATION

2.01 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically application to this contract and a complete and concise depiction of the provided equipment, product, or system. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section. Provide hard and digital copies.

A. Package Quality

1. Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

B. Package Content

1. Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission.

C. Changes to Submittals

1. Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Engineer for final acceptance of submitted data, shall be submitted by the Contractor within ten calendar days of the notification of this change requirement.

2.02 TYPES OF INFORMATION REQUIRED

A. GENERAL:

1. O&M information shall contain the names, addresses, and telephone numbers of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts. In addition, one or more of the following items of information shall be provided as applicable.

B. OPERATING INSTRUCTIONS:

1. Specific instructions, procedures, and illustrations shall be provided for the following phases of operations:

a. SAFETY PRECAUTIONS: List personnel hazards for equipment and list safety precautions for all operating conditions.

b. OPERATOR PRESTART: Provide requirements to set up and prepare each system for use.

c. START-UP, SHUTDOWN, AND POST SHUTDOWN PROCEDURES: Provide a control sequence for each of these operations.

d. NORMAL OPERATIONS: Provide control diagrams with data to explain operation and control of systems and specific equipment.

e. EMERGENCY OPERATIONS: Provide emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.

f. OPERATOR SERVICE REQUIREMENTS: Provide instructions for services to be performed by the operator such as lubrication, adjustments, and inspection.

g. ENVIRONMENTAL CONDITIONS: Provide a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or piece of equipment and describe conditions under which equipment should not be allowed to run.

C. PREVENTIVE MAINTENANCE:

1. The following information shall be provided for preventive and scheduled maintenance to minimize corrective maintenance and repair:

a. LUBRICATION DATA: Provide lubrication data, other than instructions for lubrication, in accordance with paragraph 2.02-B.1. f.

1. A table showing recommended lubricants for specific temperature ranges and applications.

2. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities; and

3. A lubrication schedule showing service interval frequency.

2. PREVENTIVE MAINTENANCE PLAN AND SCHEDULE: Provide manufacturer's schedule for routine preventive maintenance, inspections, tests, and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair. Provide manufacturer's projection of preventive maintenance man-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft.

D. CORRECTIVE MAINTENANCE:

Manufacturer's recommendations shall be provided on procedures and instructions for correcting problems and making repairs.

1. TROUBLESHOOTING GUIDES AND DIAGNOSTIC TECHNIQUES: Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

2. WIRING DIAGRAMS AND CONTROL DIAGRAMS: Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job-specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type identically to actual installation numbering.

3. MAINTENANCE AND REPAIR PROCEDURES: Provide instructions and list tools required to restore product or equipment to proper condition or operating standards.

4. REMOVAL AND REPLACEMENT INSTRUCTIONS: Provide step-by-step procedures and list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings, and adjustments required. Instructions shall include a combination of test and illustrations.

5. SPARE PARTS AND SUPPLY LISTS: Provide lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonably delays. Special consideration is required for

facilities at remote locations. List spare parts and supplies that have a long lead time to obtain.

6. CORRECTIVE MAINTENANCE MANHOURS: Provide manufacturer's projection of corrective maintenance man-hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer shall be identified and tabulated separately.

E. INSTRUCTION OF OWNER PERSONNEL:

1. Before final walk through, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.

2. For equipment requiring seasonal operation, perform instructions for other seasons within six (6) months.

3. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

4. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

F. APPENDICES:

1. The following information shall be provided; include information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment.

a. PARTS IDENTIFICATION: Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies.

b. WARRANTY INFORMATION: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force.

c. PERSONNEL TRAINING REQUIREMENTS: Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.

d. TESTING EQUIPMENT AND SPECIAL TOOL INFORMATION: Provide information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

e. CONTRACTOR INFORMATION: Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name, address, and telephone number of the manufacturer's representative and service organization most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

PART 3 – EXECUTION

3.01 TRANSMITTAL PROCEDURE

A. Unless otherwise specified, O&M manuals, information, and data shall be submitted as follows:

1. Submit one draft copy of completed volumes 30 days prior to final walk through. This copy will be reviewed and returned after final inspection, with Engineer comments. Only complete sets of O&M instructions will be reviewed for acceptance. Revise content of all document sets as required prior to final submission.

2. Submit five (confirm with Owner and Engineer final number required prior to submittal) hard copies of revised final volumes and one electronic PDF copy (CD) within ten days of conducting the final walk through.

3. Hard copies shall be submitted in commercial quality, durable, D-ring binders.

B. For ease of identification, each manufacturer's brochure and manual shall be appropriately labeled with the equipment name and equipment number as it appears in the project manual. The information shall be organized in the binders in numerical order by the equipment numbers assigned in the project manual. The binders shall be provided with a table of contents and tab sheets to permit easy location of desired information.

C. If manufacturers' standard brochures and manuals are used to describe O&M procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated.

END OF SECTION

INDEX TO

SECTION 01 78 33

BONDS

SECTION 01 78 33

BONDS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Preparation and submittal of bonds.

B. Time and schedule of submittals.

1.2 RELATED SECTIONS

A. Document 00 21 00 – Advertisement for Bids, 00 21 13 - Instruction to Bidders.

B. Document General Conditions - Performance bond and labor and material payment bonds.

C. Section 01 77 00 – Closeout Procedures: Contract closeout procedures.

D. Section 01 78 23 - Operation and Maintenance Information.

E. Individual Specifications Sections: Bonds required for specific Products or Work.

1.3 FORM OF SUBMITTALS

A. Bind in commercial quality 8-1/2 x 11 appropriately sized three D side ring binders with durable plastic covers.

B. Cover: Identify each binder with typed or printed title BONDS with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.

D. Separate each bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principals.

1.4 PREPARATION OF SUBMITTALS

A. Obtain bonds executed by responsible Subcontractors, suppliers, and manufacturers, in accordance with timeframes listed herein.

B. Verify documents are in proper form, contain full information, and are notarized.

C. Co–execute submittals when required.

D. Retain bonds until time specified for submittal.

1.5 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during construction

with Owner's permission, submit documents within ten days after Owner's acceptance.

B. Make other submittals within ten days of the date of final acceptance of the item or Work, prior to final Application for Payment.

C. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the bond period.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO

SECTION 01 78 36

WARRANTIES

SECTION 01 78 36

WARRANTIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Preparation and submittal of warranties.

B. Time and schedule of submittals.

1.2 RELATED SECTIONS

A. General Conditions – Warranties and correction of work.

B. Section 01 77 00 –Closeout Procedures: Contract closeout procedures.

C. Section 01 78 23 – Operation and Maintenance Information.

D. Individual Specifications Sections: Warranties required for specific Products or Work.

1.3 FORM OF SUBMITTALS

A. Bind in commercial quality 8–1/2 x 11 appropriately sized three D side ring binders with durable plastic covers.

B. Cover: Identify each binder with typed or printed title WARRANTIES with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.

D. Separate each warranty with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principals.

E. Provide a summary sheet of all warranties.

1.4 PREPARATION OF SUBMITTALS

A. Obtain warranties executed by responsible Subcontractors, suppliers, and manufacturers, in accordance with timeframes listed herein.

B. Verify documents are in proper form, contain full information, and are notarized.

C. Co–execute submittals when required.

D. Retain warranties until time specified for submittal.

1.5 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

B. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.

C. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION