

SECTION FOUR

COBB COUNTY WATER SYSTEM SPECIFICATIONS

MEASUREMENT AND PAYMENT

GENERAL

Only those pay items identified in the bid schedule, or added by Addendum or Supplemental Agreement, will be measured for payment by the units listed in the bid schedule and/or supplemental agreement and paid for at the Contract prices.

The cost of all Work not directly covered by the pay items shall be considered incidental to the construction and is to be included and distributed among the bid unit prices of the pay items listed in the Contract.

Contract unit prices represent the installed, complete-in-place, tested and accepted cost, including, but not limited to:

- * All required labor, tools, and equipment, unless otherwise noted.
- * All materials, unless specifically noted to be furnished by the Owner or by others, or specifically identified for payment under another pay item.
- * All required excavation, dewatering, thrust blocking, rodding, sheeting/shoring/bracing, backfill, compaction and restoration to grade, and testing.
- * All required normal traffic control.
- * Acceptable bedding as detailed, specified, or as required by conditions encountered.
- * Disposal of all surplus or waste materials, unsuitable materials, and debris.
- * Protection of existing utilities, including but not limited to locating, diligent care in handling and working around, relocating, and repairing.
- * Miscellaneous associated work necessary to complete the work in place.
- * Minor meter, meter box, and valve box adjustments.
- * All temporary taps necessary for sterilization and testing.
- * Minor manhole adjustments.
- * Preconstruction staking.
- * Coordination of additional project access as may be desired.
- * Project Record Drawings

UTILITY ALLOWANCE

Utility allowance will only be utilized at the direction of the Project Engineer, and the scope and cost must be approved prior to performance of the work.

SPECIAL CONDITIONS

The following project specific Special Conditions take precedent over plans and specifications. Section numbers shown refer to the appropriate section of the Cobb County Water System Contract Documents. All other requirements remain in full effect.

1. If additional work is required and the bid unit prices are not applicable to the necessary additional work, the Contractor shall be compensated as follows. If the additional work is to be performed entirely by the Contractor, compensations for such extra work shall be based on the direct costs as listed in a detailed proposal, plus 15 percent of direct costs for overhead and profit, plus 1 percent of such direct costs for bond. When the extra work involves subcontractors, compensation for such work shall be based on direct costs as listed by the subcontractor plus 15 percent of such direct costs for the subcontractor's overhead and profit. The Contractor may add 5 percent to the subcontractor proposal for overhead and profit, and 1 percent for bond. The 5 percent subcontractor markup shall be applied only once regardless of the number of tiers of subcontractors. The above allowances for overhead and profit shall include full compensation for overhead, including superintendence, and additional overhead attributable to a time extension granted because of the change order. For extra work that is funded from contract allowances, the 1 percent additional cost for bonds shall not be applied.

END OF SPECIAL CONDITION

SECTION 01010 - PROJECT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

Section Includes:

1. Lands and Rights-of-Way
2. Access to and Contractor's use of the site.
3. Coordination requirements.
4. Construction procedures.

1.02 LANDS AND RIGHTS-OF-WAY

- A. Access to the work shall be limited to the right-of-way or easement area provided for execution of the work. The **Contractor** shall not enter any adjacent private property without prior written approval from the property owner. Proof of such approval shall be furnished to the **Owner** upon request.
- B. If the Contractor performs any work or service for any property owner outside the specified scope of the Contractor's agreement with the Owner or has any agreements with a private property owners for access to or for temporary use of property outside of the right-of-way or easement area, a written agreement shall be entered into, with the private property owner(s) prior to any work or service being performed or prior to any use by Contractor of the private property and such agreement shall be provided to Owner. The agreement shall contain the following language, in addition to the terms agreed to between the Contractor and the property owner.

"The Property Owner understands that Cobb County is not a party to this Agreement, exercises no control over the means, methods, and execution of this agreement, and that Cobb County assumes no responsibility for the Contractor's compliance with the terms of this agreement. The Contractor shall be solely liable for any and all claims, demands, and judgments related to loss or damage to property or person (including death) arising from or in any way related to the Contractor's acts or omissions related to the agreement".

1.03 ACCESS TO AND CONTRACTOR'S USE OF THE SITE

- A. The space available to the **Contractor** for the performance of the work, either exclusively or in conjunction with others performing other construction as part of the project, is shown on the drawings.
- B. The **Owner** will continue to occupy existing facilities during the construction period.
 1. The **Owner** will endeavor to cooperate with the **Contractor's** operations when the **Contractor** has notified the **Owner** in advance of need for changes in operations in order to accommodate construction operations.
 2. The **Contractor** shall conduct the Work so as to cause the least interference with the **Owner's** operations.

- C. Adequate signage will be provided by the **Contractor** as necessary.

1.04 COORDINATION REQUIREMENTS

- A. Coordination with Owner:
 - 1. Limit access through occupied areas to those days and times which the **Owner** approves. Occupied areas include all areas in which the **Owner's** regular operations will be going on or to which the **Owner** requires access during the construction period.
 - 2. When the following must be modified, provide alternate facilities acceptable to the **Owner**:
 - a. Emergency means of egress.
 - b. Utilities which must remain in operation.
 - c. Informational signage.
 - 3. The **Contractor** shall notify the **Owner** of any circumstances which may jeopardize or have interrupted utility service.
- B. Security Procedures:
 - 1. Limit access to the site to persons involved in the work.
 - 2. Provide secure storage for materials.
 - 3. Secure completed work as required to prevent loss.
- C. Coordination of Construction:
 - 1. Inform each party involved, in writing, of procedures required for coordination of the work; include requirements for giving notice, submitting reports, and attending meetings.
 - 2. Inform the **Owner** when coordination of his work is required.
 - 3. Furnish coordination drawings, as required, where limited space available may cause conflicts in the locations of installed products, and where required to coordinate installation of products.
- D. Coordination with the Cobb County-Marietta Water Authority (CCMWA)
 - 1. All work involving the isolation of and/or connection to a water main owned by the CCMWA must have the prior approval of the CCMWA.
 - 2. The **Contractor** shall notify CCMWA of any circumstances that may jeopardize or interrupt water service.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONSTRUCTION PROCEDURES

- A. General Examination Requirements:
 - 1. Prior to performing work, examine the applicable substrates and the conditions under which the work is to be performed.
 - 2. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding.
 - 3. Notify the **Owner** promptly of any modifications required due to existing conditions or previous work.

4. Before starting work which might affect existing construction, verify the existence and location of:
 - a. Underground utilities.
 - b. Other underground construction.
 - c. Location and invert elevation of points of connection to piped utilities.
 5. Verify that utility requirements of operating equipment are compatible with building utilities.
 6. Verify space requirements of items which are shown diagrammatically on the drawings or any other items that might impact construction.
 7. Prepare preconstruction photographic documentation in conformance with the requirements of Section 01380 of these specifications.
- B. General Preparation Requirements:**
1. The **Contractor** shall obtain and pay for all required permits.
 2. Prior to starting work, the **Contractor** shall have the limits of construction field staked by, or under the supervision of, a Georgia Registered Land Surveyor. The staking shall include, but not be limited to, easement (permanent and construction) limits, construction entrances, and any other staking that is necessary to clearly define the limits of construction.
 3. Take field measurements as required to fit the work properly.
 4. Recheck measurements prior to installing each product.
- C. General Installation Procedures:**
1. Accurately install the work and components of the work.
 2. See sections describing specific parts of the work for additional requirements.
 3. Where space is limited, install components to maximize space available for maintenance and to maximize ease of removal for replacement.
 4. Install work in such manner to minimize cutting and patching.
- D. Cleaning and Protection**
1. Remove debris from concealed spaces prior to enclosing the space.
 2. Keep the site and the work free of waste materials and debris.
 3. Clean areas in which work is to be done to level of cleanliness necessary for proper execution of that work.
 4. Keep installed work clean, and clean again when soiled by other operations.
 5. Protect installed work from soiling and damage.
- E.** Do not cut existing mechanical and electrical services which are to remain in use until provisions have been made to relocate or reconnect them promptly; obtain approval of the **Owner** of the time and duration of disconnection.
- F. Installation of Components:**
1. Install products only at the time and in the sequence which will ensure the best possible results in conformance with project requirements.
 2. Install products only during environmental conditions which will ensure the best possible results.
 3. Install all products in accordance with manufacturer's instructions and recommendations, whether conveyed in writing or not.
 4. Separate incompatible materials with suitable materials or spacing.

5. Provide all anchors and fasteners required and use methods necessary to securely fasten work.
 6. After installation, adjust operating components to proper operation.
- G.** Instruction of the **Owner's** Personnel:
1. Instruct personnel designated by the **Owner** in the operation and maintenance of equipment and systems, prior to substantial completion.
 2. Arrange times and places of instruction with the **Owner**.
 3. Provide instruction by qualified manufacturer representatives.
 4. Allow videotaping of instruction sessions by **Owner**.
- H.** Final Cleaning:
1. Remove materials and equipment which are not part of the work and all debris from the site prior to substantial completion.
 2. Dispose of debris in a lawful manner.
 3. Perform final cleaning after substantial completion has been certified, but before final payment.
 4. Clean entire project site and grounds.
 5. In spaces to be occupied, remove dirt, stains, and other foreign substances from all accessible surfaces and remove nonpermanent labels.
 6. In spaces not normally occupied, remove debris and surface dust and wipe equipment clean, removing excess lubrication, paint, and other foreign substances.
 7. Remove paint and other coatings from permanent labels and from mechanical and electrical equipment nameplates.
 8. Leave the project clean and ready for occupancy.
- I.** Substantial Completion Procedures:
Reference Section 00700 6.05 of the General Conditions
- J.** Final Completion Procedures
Reference Section 00700 6.07 of the General Conditions

3.02 HEALTH AND SAFETY CONSIDERATIONS

- A.** Take precautions to prevent fires and to facilitate fire-fighting operations.
- B.** Take precautions to prevent accidents due to physical hazards.
- C.** Maintain working conditions in order to keep the site and adjacent public ways free of hazardous and unsanitary conditions and public nuisances.
- D.** Maintain working conditions in order to control rodents and other pests; prevent infestation of adjacent sites and buildings due to pests on this site.
- E.** Keep public streets free of debris due to this work.
- F.** Provide adequate traffic control by means of signs, signals, and flaggers, as necessary.

3.03 ENVIRONMENTAL CONSIDERATIONS

- A. Take care to prevent pollution of air, water, and soil.
- B. Prevent the entry of rainwater runoff into sanitary sewer system.
- C. Control windblown dust; prevent erosion to site and nuisance to neighbors.
- D. Conduct construction operations so that waste of power, water, and fuel is avoided.
- E. Noise from the **Contractor's** operations shall not exceed limits established by applicable laws or regulations and in no event shall exceed 86 dBA at a distance of 50 feet from the noise source between 7:30 p.m. and 7:00 a.m. and on the weekends.
- F. Any created or observed situation involving discharge / spill of raw sewage shall be immediately reported to the Cobb County Water System Emergency Dispatch at (770) 419-6201.

3.04 PROTECTION OF THE WORK

- A. Conduct construction operations so that no part of the work is subjected to damaging operations or influences which are in excess of those to be expected during normal occupancy conditions.
- B. Execute work and stockpile spoils and materials to prevent flooding of excavations, below-grade construction, and adjacent properties due to rainwater runoff.
- C. Protect existing property not indicated to be removed.
- D. Provide temporary supports as required to prevent movement and structural failure.
- E. All equipment and vehicles used on Water system projects shall be clearly marked with the **Contractor's** name and telephone number. The identifying markings may be in the form of magnetic signs, decals, or painted lettering and shall be located on both sides of the equipment/vehicle. The lettering shall be legible, of a contrasting color to the background surface, and at least two inches in height. All markings shall be in place upon initiation of the work on the project site.
- F. A copy of the project's Notice to Proceed letter issued by the Water System shall be available at all times on the job site as proof of the contractual relationship of the Contractor with the Water System. The letter shall be presented for review upon request by regulatory agencies or other County departments that visit the job site.
- G. If removal and replacement of a paved private driveway is required, the replacement shall be performed within two (2) weeks of removal. The permanent pavement replacement for public roadways shall be performed within thirty (30) days or within 7 days if the roadway is a state highway or major county arterial roadway. Temporary surface maintenance is the **Contractor's** responsibility and shall be adequate for the volume and type of traffic loads imposed. Temporary asphalt cold mix application, steel traffic plates, etc. shall be utilized as necessary.

H. The Contractor shall maintain copies of all permits on the project site at all times.

3.05 NOTIFICATION OF SERVICE INTERRUPTION

During progress of work under this Contract, it may be necessary to temporarily interrupt water, sewer or other utility service to a limited number of customers in the vicinity of the work. It shall be the **Contractor's** responsibility to coordinate the service outage with the utility owner and to provide proper advance notification (a minimum of 48 hours) to the affected customers.

The **Contractor** is alerted to the fact that due to the nature of businesses and traffic in certain projects' areas, water outages for connections, service changeovers, and other work may not be allowable during normal work hours. Considerations of this are to be factored into bid price submitted. Coordination, special lighting, traffic control, employee overtime, special customer notification, etc. shall be included in these considerations by the **Contractor**.

3.06 WATER DISTRIBUTION SYSTEM VALVE OPERATION

All water distribution system service interruptions or outages, such as through water distribution system valve operation, either through pre-approved scheduling or in response to emergency situations, shall require the **Contractor** to notify the appropriate inspector/project engineer of the Cobb County Water System and the Cobb County Water System Dispatch/Emergency office at (770) 419-6201. Specifics of the outage shall be provided, including but not limited to the following information: **Contractor**, **Contractor** authorized representative providing the notice, contact number(s) of the Contractor or representative, anticipated duration of the outage, geographical limits of the outage, and definitive identification of the valves to be operated. The Cobb County Water System shall log this information for reference in the event inquiries develop and to ensure valves are repositioned correctly.

Upon conclusion of the work or repair and after service has been restored, the **Contractor** shall again notify the appropriate project representative of the Cobb County Water System and the Cobb County Water System Dispatch/Emergency office to confirm and crosscheck, as appropriate, that all affected valves have been fully and correctly repositioned. Additional **Contractor** contact information shall be provided to maintain and ensure Contractor responsibility for 24 hours or the next work day, whichever is longer. Such action does not relieve the **Contractor** from overall contract warranty responsibility.

Unauthorized operation of the Cobb County Water System water distribution system valves, hydrants, or other appurtenances, or operation in which the proper notification is not provided, is expressly forbidden and subject to penalties.

3.07 TRAFFIC CONTROL

The **Contractor** shall be responsible for traffic control during the course of each phase of the work. A Cobb County Department of Transportation (CDOT) Utility Permit shall be required for all partial and full lane closures. Road closures and / or detours shall require a CDOT Road Closure Permit. **Contractor** shall submit a traffic control plan to the **Owner** a minimum of two weeks prior to partial or full lane closures and a minimum of four weeks prior to a road closure along with other pertinent information needed for the associated

permit application. The **Owner** will submit the permit application to CDOT. The traffic control plan shall conform to CDOT requirements and be in conformance with the Manual on Uniform Traffic Control Devices for Streets and Highways. In the event the road or lane closure is necessary within the limits of a municipality or on a State of Georgia highway, the **Contractor** shall make direct application to the municipality or the Georgia Department of Transportation for the necessary road or lane closure permits. The **Contractor** shall install and maintain traffic control compliant with the approved permit, including but not limited to, trained and properly equipped flagmen, to safely control all traffic through the work zone(s). It is the **Owner's** intent that this work be accomplished with as little disturbance to traffic, private property, and the public as is reasonably possible, consistent with timely completion thereof.

3.08 WEEKLY SITE REVIEW

On a regular weekly basis, or prior to an inclement weather event forecast, the Contractor's field superintendent shall perform a full review of the construction site with the Construction Manager or his designee. This review shall examine the condition of the erosion/sedimentation control facilities, adequacy of traffic control and work zone safety facilities and procedures, restoration of disturbed areas, housekeeping of project site, proposed works plans for the coming week, and other pertinent items. Deficiencies shall be recorded and a schedule for resolution shall be established.

3.09 WATER CONSERVATION

The **Contractor** is required to exercise water conservation efforts to the fullest extent possible. These efforts shall include compliance with the current Cobb County "Drought Response Plan Regulations". The **Contractor** shall otherwise stage and sequence operations to be as effective as possible in conserving water and to collect any flushing water for reuse as dust control, backfill or roadway base consolidation, watering of landscape restoration, etc. All direct use of water from fire hydrants shall be metered via fire hydrant meters obtained from the Cobb County Water System. Any observed use of non-metered water by the **Contractor** shall be immediately reported to the **Owner**. Any observed leaks from an existing water main or fire hydrant shall be immediately reported. Leaks on newly installed, but not in service water mains, shall promptly be isolated and repaired. Best practices for irrigation shall be followed.

END OF SECTION 01010

SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

Record documents refer to those documents maintained and annotated by the **Contractor** during construction to provide a record of the Work as installed. The Record Drawings are defined as a neatly and legibly marked set of Contract Drawings showing the final location of piping, valves, fittings, and equipment. The Record Drawings shall show field changes, changes by change order, and details not shown on the original Contract Drawings.

1.02 SUBMITTALS

Submit one set of Record Drawings and one copy of the Record Survey (if required) in accordance with Substantial Completion Procedures (00700, 6.05). The **Owner** may withhold declaring the project substantially complete and shall withhold Final Payment until acceptable Record Drawings are submitted.

1.03 QUALITY ASSURANCE

- A. The Record Drawings shall be maintained continuously. Prior to each request for partial progress payment, the **Owner** may review the Record Drawings with the **Contractor**. Progress payments may be withheld or reduced if Record Drawings are not current.
- B. In addition to the annotated Contract Drawings, the **Contractor** shall provide a Record Survey of sanitary sewer lines installed as a part of the Work. This Record Survey shall be prepared under the supervision of, and be sealed by, a Land Surveyor registered in the State of Georgia.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. Unless otherwise required, the Record Drawings shall be a full-size set of the Contract Drawings maintained in a clean, dry and legible condition. Each drawing shall be marked "RECORD DRAWING" in large, clear print. Annotations on the drawings should be made with red pencil or red ink. Record Drawings shall not be used for construction purposes.
- B. Marking of the drawings shall be kept current and shall be done at the time the material and equipment are installed. Do not conceal any work until required information is recorded.
- C. If the project consists of both water line work and sanitary sewer work, the Record Drawings for each shall be maintained separately. Additional sets of the Contract Documents will be furnished by the **Owner** for Record Drawing purposes.

- D.** The **Contractor's** name, address and telephone number shall be shown on each sheet. The date(s) of installation of the Work shall also be shown on each sheet of the plan set.

3.02 WATER LINE RECORD DRAWINGS

- A.** In addition to the information shown on the Contract Drawings, the Water Line Record Drawings must contain the following information:
1. Pipe size, material, and pressure class.
 2. Manufacturer's name and model number of fire hydrants and valves; date of manufacture.
 3. Horizontal location of water lines, valves, fire hydrants, service connections, meters, air release valves and all other appurtenances. Location to be referenced to horizontal control system shown on the Contract Drawings (e.g., station and offset). If the location is identical to that shown on the Contract Drawings, indicate with the annotation "As Installed".
 4. Vertical location of water lines at crossings of creeks, storm drains, sanitary sewers, and other utilities. Also indicate any other locations where the depth of the water lines are other than standard depth.
 5. Detailed sketches, with dimensions, of connections of water mains, including valves and fittings.
- B.** Field-measured tie-down dimensions shall be provided for all valves installed (except for those on fire hydrant leads). Each valve shall be referenced to no less than three permanent and well-defined physical objects located within 100 feet of the valve. Tie-down measurements shall be shown to the nearest one-hundredth of a foot. The tie-down dimensions and reference object descriptions shall be clearly presented on the Record Drawings in the form of tables or enlarged scale sketches.

3.03 SANITARY SEWER RECORD DRAWINGS

- A.** In addition to the information shown on the Contract Drawings, the Sanitary Sewer Record Drawings must contain, as a minimum, the following information:
1. Pipe material.
 2. Manhole type, if other than standard (i.e., drop, doghouse, etc.).
 3. Pipe size and slope and length between manholes. Slope shown as percent to the nearest hundredth; length to the nearest tenth of a foot.
 4. All pipe end inverts (ins and outs) to the nearest hundredth of a foot.
 5. Manhole rim elevation to the nearest hundredth of a foot.
 6. Ground elevation at each manhole to the nearest tenth of a foot.
 7. Stationing between manhole centers to the nearest tenth of a foot.
 8. Relative horizontal angle between all pipes entering and exiting manholes; to the nearest second.
 9. Horizontal location of service laterals, stationed along sewer centerline from manholes.
 10. Invert elevation of lateral at right-of-way or easement limit; required only if lateral depth is other than standard shallow service connection.

- B.** If the project includes a sewage pump station and force main, provide the following information:
1. Elevations to accuracy noted, using site bench mark as reference, including:
 - a. Wet well top slab, bottom slab, invert of incoming gravity sewers, and centerline of pump discharge lines exiting; hundredths of a foot.
 - b. Equipment building slab; hundredths of a foot.
 - c. Generator slab; hundredths of a foot.
 - d. Ground at wet well and at fence corners; tenths of a foot.
 - e. Centerline of access road, on 50 foot centers; tenths of a foot.
 2. Site, mechanical and electrical drawings, marked to show any changes.
 3. Equipment manufacturer names and model numbers; including pumps, valves, generator, etc.
 4. Force main pipe size and material.
 5. Horizontal location of force main, air release valves and all other appurtenances. Location to be referenced to horizontal control system shown on the Contract Drawings (e.g., station and offset). If the location is identical to that shown on the Contract Drawings, indicate with the annotation "As Installed".
 6. Vertical location of force main at crossings of creeks, storm drains, water lines, and other utilities. Also indicate any other locations where the depth of the force main is other than standard depth.

3.03 SANITARY SEWER RECORD SURVEY

- A.** As noted in Paragraph 1.03.B above, the **Contractor** shall provide a Record Survey of sanitary sewer lines installed as a part of the Work, in addition to the annotated Contract Drawings submitted as Record Drawings. The Record Survey must include, as a minimum, the following information:
1. Pipe size and slope and length between manholes. Slope shown as percent to the nearest hundredth; length to the nearest tenth of a foot.
 2. All pipe end inverts (ins and outs) to the nearest hundredth of a foot.
 3. Manhole rim elevation to the nearest hundredth of a foot.
 4. Ground elevation at each manhole to the nearest tenth of a foot.
 5. Ground profile along centerline of sewer between manholes; to the nearest tenth of a foot.
 6. Manhole stationing to the nearest tenth of a foot.
 7. Relative horizontal angle between all pipes entering and exiting manholes; to the nearest second.
- B.** The Record Survey must be referenced to the horizontal and vertical controls shown on the Contract Drawings. The coordinates of the manholes shall be presented in tabular form on each sheet of the set.
- C.** Each drawing shall indicate the Cobb County Water System project name and project number, the **Contractor's** name, address and telephone number, the surveyor's name, address and telephone number, and the surveyor's seal.

END OF SECTION 01720

SECTION 01730 - OPERATING AND MAINTENANCE DATA SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. Compile product data and related information appropriate for **Owner's** maintenance and operation of products furnished under Contract.
- B. Instruct **Owner's** personnel in maintenance of products and in operation of equipment and systems.

1.02 QUALITY ASSURANCE

Preparation of data shall be done by personnel trained and experienced in maintenance and operation of described products. The manual shall be provided in a printed format and an electronic format.

1.03 FORM OF SUBMITTALS

- A. Prepare data in form of an instructional manual for use by **Owner's** personnel as required.
- B. Printed Format:
 - 1. Size: 8-1/2 inches x 11 inches.
 - 2. Paper: 20 pound minimum, white, for typed pages.
 - 3. Text: Manufacturer's printed data, or neatly typewritten.
 - 4. Drawings:
 - a. Provide reinforced punched binder tap, bind in with text.
 - b. Reduce larger drawings and fold to size of text pages but not larger than 11 inches x 17 inches.
 - 5. Provide fly-leaf for each separate product, or each piece of operating equipment.
 - a. Provide typed description of product, and major component parts of equipment.
 - b. Provide indexed tabs.
 - 6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:
 - a. Title of Project.
 - b. Identity of separate structure as applicable.
 - c. Identity of general subject matter covered in the manual.
 - 7. Binders:
 - a. Commercial quality three post binders with durable, cleanable covers.
 - b. Maximum Post Width: 2 inches.
 - c. Color of binders to be selected by the Owner.
 - d. When multiple binders are used, correlate the data into related consistent groupings.

C. Electronic Format:

1. Operations & Maintenance Manual – The facility O&M manual shall be in PDF format, compliant with the Adobe PDF Specification Version 1.3. The manual shall be PDF Formatted Text and Graphics (formerly Normal) or PDF Searchable Image (formerly Image+Text). If submitted in Searchable Image format the Optical Character Recognition shall be at a 95% confidence level, using Adobe Acrobat® Capture® 3.x or an equivalent product. The manual shall be linked and bookmarked as follows:
 - a. Provide links from all Table of Contents, List of Tables, List of Figures, etc., entries to the actual occurrence in the body of the manual.
 - b. Provide internal links from table, paragraph, or figure references within the body of the manual to the actual table, paragraph, or figure.
 - c. Provide external links from the references within the body of the manual to other documents (vendor manual, photograph, drawing, etc.)
 - d. Create bookmarks for all linked Table of Content entries.
2. Vendor Manuals – The Vendor provided equipment, sub-system, or system manuals shall be in PDF format, compliant with the Adobe PDF Specification Version 1.3. The manual shall be PDF Formatted Text and Graphics (formerly Normal) or PDF Searchable Image (formerly Image+Text). If submitted in Searchable Image format the Optical Character Recognition shall be at a 95% confidence level, using Adobe Acrobat® Capture® 3.x or an equivalent product. The manuals shall be linked and bookmarked as follows:
 - a. Provide links from all Table of Contents, List of Tables, List of Figures, etc., entries to the actual occurrence in the body of the manual.
 - b. Create bookmarks for all linked Table of Content entries.
3. Drawings – All facility drawings shall be in PDF format, compliant with the Adobe PDF Specification Version 1.3. The manual shall be PDF Formatted Text and Graphics (formerly Normal) or PDF Searchable Image (formerly Image+Text). If submitted in Searchable Image format the Optical Character Recognition shall be at a 95% confidence level, using Adobe Acrobat® Capture® 3.x or an equivalent product. The drawings shall be linked as follows:
 - a. External links from the Drawing Index (if it exists) to each drawing.
 - b. External links from references within drawings to other drawings.
4. Drawings (CAD) – All facility drawings available in native format (i.e. AutoCAD) shall be provided as electronic files, in a native format supported by available viewers.
5. Photographs – Any available digital photographs that support facility operations and maintenance shall be provided in JPEG format.
6. Videos – Any available videos that support facility operations and maintenance shall be provided in AVI or MOV format.
7. Other – Any other documents that support facility operations and maintenance manual shall be in PDF format, compliant with the Adobe PDF Specification Version 1.3. The manual shall be PDF Formatted Text and Graphics (formerly Normal) or PDF Searchable Image (formerly Image+Text). If submitted in Searchable Image format the Optical Character Recognition shall be at a 95% confidence level, using Adobe

Acrobat® Capture® 3.x or an equivalent product. The manual shall be linked and bookmarked per paragraph 1.03.C.2.

1.04 CONTENT OF MANUAL

- A. Neatly typewritten table of contents for each volume, arranged in systematic order.
 - 1. Design/Builder, name of responsible principal, address and telephone number.
 - 2. A list of each product required to be included, indexed to content of the volume.
 - 3. List, with each product, name, address and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance Contractor, as appropriate.
 - c. Identify area of responsibility of each.
 - d. Local source of supply for parts and replacement.
 - 4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

- B. Product Data:
 - 1. Include only those sheets which are pertinent to the specific product.
 - 2. Annotate each sheet to:
 - a. Clearly identify specific product or part installed.
 - b. Clearly identify data applicable to installation.
 - c. Delete references to inapplicable information.

- C. Drawings:
 - 1. Supplement product data with drawings as necessary to clearly illustrate:
 - a. Relations and component parts of equipment and systems.
 - b. Control and flow diagrams.
 - 2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 - 3. Do not use Project Record Documents as maintenance drawings.

- D. Written text, as required to supplement product data for the particular installation:
 - 1. Organize in consistent format under separate headings for different procedures.
 - 2. Provide logical sequence of instructions of each procedure.

- E. Copy of each warranty, bond and service contract issued.
 - 1. Provide information sheet for **Owner's** personnel, give:
 - a. Proper procedures in event of failure.
 - b. Instances which might affect validity of warranties or bonds.

1.05 SUBMITTAL SCHEDULE

- A. Submit two copies (printed and electronics) of the Operation and Maintenance Manuals to the **Owner** for review no later than sixty days prior to the anticipated date for start-up of the equipment. Applications for Payment will not be processed if timely submittals are not made.

- B. Submit two copies (printed and electronic) of the final Operation and Maintenance Manuals, incorporating any review comments by the **Owner**. The final Application

for Payment will not be processed until the proper material is submitted.

1.06 INSTRUCTION OF OWNER'S PERSONNEL

Prior to inspection for substantial completion, fully instruct **Owner's** designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems supplied under this Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01730

SECTION 01740 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Compile specified warranties and bonds.
- B. Co-execute submittals when so specified.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit to the **Owner** for review.

1.02 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: Two each.

1.03 FORM OF SUBMITTALS

- A. Prepare in duplicate packets.
- B. Format:
 - 1. Size 8-1/2 inches x 11 inches, punch sheets for standard 3-post binder.
 - a. Fold larger sheets to fit into binders.
 - 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS." List:
 - a. Title of Project.
 - b. Name of Contractor.
- C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum width of 2 inches.

1.04 WARRANTY REQUIREMENTS

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with the **Contractor's** for one (1) year commencing at the time of acceptance by the **Owner**.
- B. The **Contractor** shall be responsible for obtaining certificates for equipment warranty for all major equipment specified herein which lists for more than \$1,000. The **Owner** reserves the right to request warranties for equipment not classified as major. The **Contractor** shall still warrant equipment not considered to be "major" in the **Contractor's** one-year warranty period even though certificates of warranty may not be required.
- C. Equipment shall be warranted to be free from defects in workmanship, design, and materials. If any part of the equipment should fail during the warranty period, it

shall be replaced and the equipment restored to service at no expense to the **Owner**.

- D. The manufacturer's warranty period shall run concurrently with the **Contractor's** warranty or guarantee period. No exception to this provision shall be allowed.
- E. Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The **Contractor** is responsible for the cost of replacing or rebuilding defective work regardless of whether the **Owner** has benefited from use of the work through a portion of its anticipated useful service life.
- F. When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- G. When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- H. Written warranties made to the **Owner** are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
- I. The **Owner** reserves the right to reject warranties and to limit selections to Products with warranties not in conflict with requirements of the Contract Documents.
- J. The **Owner** reserves the right to refuse to accept work for the project where a special warranty, certification, or similar commitment is required on such work or part of the work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- K. Manufacturer's disclaimers and limitations on product warranties do not relieve the **Contractor** of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers and subcontractors required to countersign special warranties with the **Contractor**.
- L. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the **Owner**.
- M. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the **Owner**.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01740

SECTION 03410 - PRECAST CONCRETE STRUCTURES

PART 1 - GENERAL

1.01 SCOPE OF WORK

Furnish all materials, labor and equipment and construct manholes, as shown on the Drawings and as specified herein.

1.02 SUBMITTALS

Submit to the Owner Shop Drawings of the products specified herein. Shop drawings of the precast structures shall show details of construction, reinforcing and joints.

1.03 INSPECTION

- A. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Owner.
- B. At the time of inspection, the sections will be carefully examined for compliance with the ASTM designation specified below and these Specifications, and with the approved manufacturer's drawings. Imperfections may be repaired, subject to the approval of the Owner, after demonstration by the manufacturer that strong and permanent repairs result.

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE MANHOLES

- A. Precast concrete manhole base, barrel and eccentric top sections shall conform to Specifications for Precast Reinforced Concrete Manhole Sections, ASTM Designation C478, except as otherwise specified below. The method of construction shall conform to the Drawings and the following additional requirements:
 - 1. Barrel sections shall have tongue and groove joints. Joints shall have elastomeric gaskets conforming to ASTM C443 standard specifications. Flexible plastic gaskets (Ram-Nek or equal) meeting Federal Specifications SS-S-210A "Sealing Compound, Preformed Plastic for Pipe Joints", Type I, Rope Form and AASHTO Designation M-198 75 1, Type B, Flexible Plastic Gasket (Bitumen) are also acceptable.
 - 2. Type I cement shall be used except as otherwise approved.
 - 3. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section. Each section of the manhole must be inspected and stamped by an accredited testing laboratory.
 - 4. Sections shall be cured by an approved method for at least 28 days.
 - 5. Top sections shall be eccentric except that precast concrete slabs shall be used where cover over the top of the pipe is less than 4 feet for all manholes.

6. Precast concrete slabs over top section, where required, shall be capable of supporting the overburden plus a live load equivalent to AASHTO H-20 loading.
 7. Manholes steps shall be cast into the precast sections and shall conform to ASTM Specification C478. Steps shall be Plastic Step by M.A. Industries, Inc., or equal.
 8. Holes in precast sections to receive sewer pipe shall be precast at the factory at the required locations. All precast holes shall have Kor-N-Seal (or equal) rubber boots.
 9. The tops of bases shall be suitably shaped to mate with the precast barrel section.
 10. All manholes, except those located in paved areas or where precise adjustment of top elevation is required, shall be furnished with the cover frame cast into the top section.
- B. Cast iron frames and covers shall be EJCO V-1480, U.S. Foundry Model USF-360E, or approved equal or as shown on the drawings. Watertight frames and covers shall be EJCO V-2480, U.S. Foundry Model USF 360E or approved equal with rubber gasket and stainless steel bolts.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Manholes and other precast structures shall be constructed to the dimensions as shown on the Drawings and as specified in these Specifications.
- B. Precast concrete structure sections shall be set so as to be vertical and with sections in true alignment with a 1/4-inch maximum tolerance to be allowed.
- C. If possible, holes in the concrete manhole sections required for handling or other purposes shall not penetrate completely through the wall. All lifting holes shall be plugged with a non-shrinking grout.
- D. Where holes must be field cut in the precast sections to accommodate pipes, the holes shall be cored to provide a smooth sealing surface for connecting boots. All coring shall be done prior to setting the manhole sections in place.
- E. Manholes shall have an invert channel shaped to correspond with the lower half of the pipe. The top of the shelf shall be sloped to drain toward the flowing through channel.
- F. Where adjustment or replacement of a manhole frame and cover is necessary, the following requirements shall apply:
 1. Adjustment of frame and cover to grade shall be accomplished with a precast concrete and/or HDPE leveling rings, fully bedded in portland cement mortar. In no case shall vertical adjustment exceed 14 inches.
 2. The top of the frame shall be set flush with, and match the slope of, the surrounding pavement.

3. Frame shall be set in a portland cement mortar bed (1½ inch maximum thickness).
4. Exterior surface of rings used in leveling course area shall be coated with a portland cement plaster (½ inch minimum thickness).
5. Adjustment or replacement of frame and covers on sewer outfall manholes shall require frame to be set on flexible plastic gasket (reference 2.01, A, 1. of this section), and anchored (along with any adjustment rings) to the manhole structure with four ½" diameter stainless steel threaded rods with nuts and washers. Rods shall be anchored into the existing structure using an epoxy adhesive equal to the Hilti H/T RE 500 System, following the manufacturer's instructions.

END OF SECTION 03410