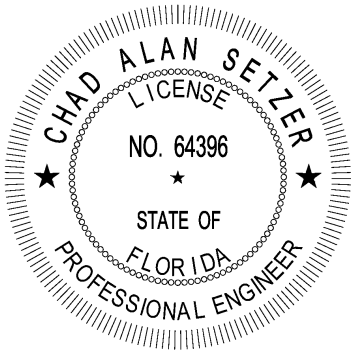
CITY OF VENICE

VENETIAN PARKWAY WATER & SANITARY SEWER RELOCATION

BID READY TECHNICAL SPECIFICATIONS

JULY 2019



Chad A Setzer

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CITY OF VENICE
VENETIAN PARKWAY WATER & SANITARY SEWER RELOCATION

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TECHNICAL SPECIFICATIONS

SECTION 01005

GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 DEFINITIONS

A. "Owner's Representative" – Throughout these technical specifications, the term "Owner's Representative" shall mean "Resident Project Representative" as defined in the General Conditions.

1.2 SCOPE OF WORK

A. Description

The work to be done consists of the furnishing of all labor, materials and equipment, and the performance of all work included in this Contract.

B. Work Included

The Contractor shall furnish all labor, superintendence, materials, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies and other means of construction necessary or proper for performing and completing the work. He shall perform and complete the work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the Owner's Representative, and in strict accordance with the Contract Documents. The Contractor shall clean up the work and maintain it during and after construction, until accepted, and shall do all work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the work.

The cost of incidental work described in these General Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.

The Contractor shall provide and maintain such modern plant, tools, and equipment as may be necessary, in the opinion of the Engineer, to perform in a satisfactory and acceptable manner all the work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his workmanship, materials and equipment, prior approval of the Engineer notwithstanding.

The Contractor shall comply with the requirements of all permits and regulatory agencies having jurisdiction over the various portions of the Work. Contractor shall provide and maintain effective erosion control measures for the entire duration that construction is in progress.

C. Public Utilities and Structures

Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto whether owned or controlled by the Owner, other governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage, water or other public or private property whichmaybe affected by the work shall be deemed includedhereunder.

The Contractor shall protect all public utility installations and structures from damage during the work, except those specifically designated to be removed or relocated. Access across any buried public utility installation, or structure, shall be made only in such locations and by means approved by the Engineer. The Contractor shall so arrange his operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor which are shown on the Plans or have been located in the field by the utility shall be repaired by the Contractor, at his expense, as directed bythe Owner's Representative. No separate payment shall be made for such protection or repairs to public utility installations or structures.

Public utility installations or structures owned or controlled by the Owner or other governmental body which are shown on the Plans to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as a part of the general cost of doing the work and shall be included in the prices bid for the various contract items. No separate payment shall be made therefore.

Where public utility installations or structures owned or controlled by the Owner or other governmental body are encountered during the course of the work, and are not indicated on the Plans or in the Specifications, and when, in the opinion of the Engineer, removal, relocation, replacement or rebuilding is necessaryto complete the work under this Contract, such work shall be accomplished by the utility having jurisdiction, or such work may be ordered, in writing by the Engineer, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required.

The Contractor shall give written notice to Owner and other governmental utility departments and other owners of public utilities of the locations of his proposed construction operations, at least forty-eight hours in advance of breaking ground in

any area or on any unit of the work. This can be accomplished by making the appropriate contact with the "Underground Utility Notification Center for Excavators (Sunshine State One Call of Florida)."

The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the Engineer.

D. Contractor's Use of Premises

Unless otherwise indicated on the Drawings or directed, all project construction work will be accomplished on Owner owned property, rights-of-way, or easements, and the Contractor shall confine his activity to those designated areas. The Contractor shall not enter upon private property for any reason without securing prior permission from the property owner. Such permission, including any stipulations, shall be in writing and a copy shall be delivered to the Owner's Representative prior to the Contractor's entry or occupation of the subject property. This requirement will be rigidly enforced.

When access through construction areas must be disrupted, the Contractor shall provide alternate acceptable access, as specified herein. The residents shall be allowed uninterrupted access to their homes throughout the construction phase.

The Contractor shall perform his work in such manner that he will not damage adjacent public or private property. Any damage to existing physical structures or utility services shall be repaired or restored promptly at no expense to the Owner within three (3) days.

The Contractor shall avoid damage to and preserve all existing vegetation (grass, shrubs, trees, etc.,) on or near the work area which do not, within reason, interfere with construction. The Contractor will be responsible for and required to replace or restore all such vegetation damaged or destroyed at no cost to the Owner. The Contractor will also be responsible for any unauthorized cutting or damage to trees, shrubs, etc. and also includes damage caused by careless operation of equipment, storage of materials and rutting or tracking of grass by equipment.

During the progress of the work the Contractor shall keep the work site free from an accumulation of rubbish, waste materials or any type of debris resulting from the construction. Upon completion of the work all equipment, excess materials, etc., shall be removed from the project site as soon as is practicable, and the Contractor shall restore the entire project work site to its original condition, with the exception of any area(s) designated for alteration by the Contract Documents.

1.3 DRAWINGS AND SPECIFICATIONS

A. Drawings

When obtaining data and information from the Drawings, figures shall be used in preference to scaled dimensions, and large scale drawings in preference to small scale drawings.

B. Copies Furnished to Contractor

The Contractor shall furnish each of the subcontractors, manufacturers, and suppliers such copies of the Contract Documents as may be required for their work. Additional copies of the Drawings and Specifications, when requested, may be furnished to the Contractor at cost of reproduction.

C. Supplementary Drawings

When, in the opinion of the Engineer, it becomes necessary to explain more fully the work to be done or to illustrate the work further or to show any changes which may be required, Drawings known as Supplementary Drawings, with Specifications pertaining thereto, will be prepared by the Engineer and five paper prints thereof will be given to the Contractor and the Owner.

D. Contractor to Check Drawings and Data

The Contractor shall verify all dimensions, quantities and details shown on the Drawings, Supplementary Drawings, Schedules, Specifications or other data received from the Engineer and shall notify him of any errors, omissions, conflicts and discrepancies found therein. The Contractor shall submit to the Engineer a Request for Information (RFI), consecutively numbered, detailing all errors, omissions, conflicts and discrepancies. Engineer shall promptly provide a response to all RFIs submitted by the Contractor. Contractor will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the Engineer, should such errors or omissions be discovered.

E. Specifications

The Technical Specifications consist of three parts: General, Products and Execution. The General Section contains General Requirements which govern the work. Products and Execution modify and supplement these by detailed requirements for the work and shall always govern whenever there appears to be a conflict.

The inclusion of the Related Requirements (or work specified elsewhere) in the General part of the specifications is only for the convenience of the Contractor, and shall not be interpreted as a complete list of related Specification Sections.

Certain portions of the work maybe described byreference to the "FDOT Standard Specifications" or "Standard Specifications." These terms refer to the Florida

Department of Transportation (FDOT) "Standard Specifications" for Road and Bridge Construction," latest edition. Whenever the "Standard Specifications" use the word "Department" or reference any of its engineers, agencies or representatives, the word or reference shall be taken to mean "City of Venice, Florida." In any case where a specific specification regarding materials or method of construction has been omitted in thetechnical specifications for the Work of this project, such work shall be performed by the Contractor in accordance with the applicable "Standard Specifications" as determined by the Engineer.

F. Intent

All work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice verse, shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

The inclusion of the Related Requirements (or work specified elsewhere) in the General part of the specifications is only for the convenience of the Contractor, and shall not be interpreted as a complete list of related Specification Sections.

G. Project Submittals

The Contractor shall submit a minimum of six (6) copies of the manufacturer's shop drawings, descriptive literature and appropriate certified test reports on all materials to be used on this project.

The Contractor shall submit all Shop Drawings and schedules sufficiently in advance of construction requirements to provide adequate time for review.

1.4 MATERIALS AND EQUIPMENT

A. Manufacturer

The names of proposed manufacturers, suppliers and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Engineer for approval. Such approval must be obtained before shop drawings will be checked. No manufacturer will be approved for any materials to be

furnished under this Contract unless he shall be of good reputation and have a plant of ample capacity. He shall, upon the request of the Engineer, be required to submit evidence that he has manufactured a similar product to the one specified and that it has been previously used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request, in writing to the Engineer, that the manufacturer or subcontractor deal directly with the Engineer. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.

Any two or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.

All materials and equipment shall be new, unless otherwise provided. The Contractor shall furnish satisfactory evidence as to the type and quality of materials or equipment to be furnished and installed on this project.

Materials of fabrication and construction to be furnished and permanentlyinstalled in the project shall be of the best quality. The workmanship of construction, fit and finish on the project shall be equal to the highest standards of the industry. As indicated above, all materials and equipment and/or components thereof shall be new and shall not have been in service at any other installation.

B. Delivery

The Contractor shall deliver materials in ample quantities to insure the most speedy and uninterrupted progress of the work so as to complete the work within the allotted time. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the work of any related Contractor. The Contractor shall replace, at his own expense, all such material(s) found to be damaged in shipment or handling or defective in manufacture. The cost of the replacement material and labor of installation for the replacement of previously installed material found to be defective prior to the final acceptance of the work shall also be the responsibility of the Contractor.

All materials and equipment to be incorporated into the project shall be loaded and unloaded by a method that will provide protection against damage. Every precaution shall be taken to prevent damage or injury to the equipment and material during transporting and handling. Proper and suitable power equipment shall be used in the loading or unloading process. Under no condition shall any items of equipment be dropped or rolled from a truck or dragged over the ground after being unloaded. When a crane or similar type equipment is being used in loading or unloading a suitable lifting sling and hook shall be used.

C. Storage

It will be the responsibility of the Contractor to store delivered materials or equipment in a secure area. The Owner will not be responsible for any damages resulting from vandalism or other reasons. Replacement of materials or equipment lost, stolen, damaged or destroyed due to careless or improper storage will be the Contractor's responsibility. All stored materials shall be easily and readily accessible for inspection by the Owner's Representative.

D. Tools and Accessories

The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind or size of equipment, one complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment. Such tools and appliances shall be furnished in approved painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

Spare parts shall be furnished as specified.

Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight and principal rating data.

E. Installation of Equipment

The Contractor shall have on hand sufficient proper equipment and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character.

Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Drawings, unless directed otherwise by the Engineer during installation. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.

The Contractor shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be as approved by the Engineer and made of ample size and strength for the purpose intended. Substantial templates and working drawings for installation shall be furnished.

The Contractor shall, at his own expense, furnish all materials and labor for, and shall properly bed in non-shrink grout, each piece of equipment on its supporting base that rests on masonry foundations. Grout shall completely fill the space

between the equipment base and the foundation. All metal surfaces coming in contact with concrete or grout shall receive a coat of coal tar epoxy equal to Kop-Coat 300M.

Materials and coatings that will be in contact with potable water shall comply with NSF Standard 61 requirements.

F. Service of Manufacturer's Engineer

The Contract prices for equipment shall include the cost of furnishing a competent and experienced engineer or superintendent who shall represent the manufacturer and shall assist the Contractor, when required, to install, adjust, test and place in operation the equipment in conformity with the Contract Documents. After the equipment is placed in permanent operation by the Owner, such engineer or superintendent shall make all adjustments and tests required by the Engineer to prove that such equipment is proper and in satisfactory operating condition, and shall instruct such personnel as may be designated by the Owner in the proper operation and maintenance of such equipment.

1.5 INSPECTION AND TESTING

A. General

Inspection and testing of materials will be performed by the Contractor's independent laboratory or the equipment manufacturer unless otherwise specified. The testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Three copies of the reports shall be submitted and authority's certification thereof must be furnished to the Engineer as a prerequisite for the acceptance of any material or equipment.

If, in the making of any test of any material or equipment, it is ascertained by the Engineer that the material or equipment does not comply with the Contract, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the Owner.

Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.

The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof

B. Costs

The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the Contractor and such costs shall be deemed to be included in the Contract price.

Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the Owner for compliance. The Contractor shall reimburse the Owner for the expenditures incurred in making such tests on materials and equipment which are rejected for non-compliance.

C. Inspection of Materials

The Contractor shall give notice in writing to the Engineer, sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Engineer will arrange to have a representative present at such times during the manufacture as maybe necessary to inspect the materials or he will notify the Contractor that the inspection will be made at a point other than the point of manufacture, or he will notify the Contractor that inspection will be waived. The Contractor must comply with these provisions before shipping any material. Such inspection shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

D. Certificate of Manufacture

When inspection is waived or when the Engineer so requires, the Contractor shall furnish to him authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Contract Documents. These certificates shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

E. Shop Tests of Operating Equipment

Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function or special requirements are specified shall be tested in the shop of the maker in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. No such equipment shall be shipped to the work until the Engineer notifies the Contractor, in writing, that the results of such tests are acceptable.

Five copies of the manufacturer's actual test data and interpreted results thereof, accompanied by a certificate of authenticity sworn to by a responsible official of the manufacturing company, shall be forwarded to the Engineer for approval.

The cost of shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor.

F. Preliminary Field Tests

As soon as conditions permit, the Contractor shall furnish all labor, materials, and instruments and shall make preliminary field tests of equipment. If the preliminary field tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to the acceptance tests, make all changes, adjustments and replacement required. The furnishing Contractor shall assist in the preliminary field tests as applicable.

G. Final Field Tests

Upon completion of the work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

The Contractor shall furnish labor, fuel, energy, and all other materials, equipment and instruments necessary for all acceptance tests, at no additional cost to the Owner. The Supplier shall assist in the final field tests as applicable.

H. Failure of Tests

Any defects in the materials and equipment or their failure to meet the tests, guarantee or requirements of the Contract Documents shall be promptly corrected by the Contractor by replacements or otherwise as directed by the Engineer. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails to make these corrections or if the improved materials and equipment, when tested, shall again fail to meet the guarantees or specified requirements, the Owner, notwithstanding its partial payment for work, and materials and equipment, may reject the materials and equipment and may order the Contractor to remove them from the site at this own expense.

I. Final Inspection

During such final inspections, the work shall be clean and free from water. In no case will the final estimate be prepared until the Contractor has complied with all requirements set forth and the Engineer has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily

constructed in accordance with the requirements of the Contract Documents.

1.6 PREPARATION AND CERTIFICATION OF AS-BUILTDRAWINGS

A. Contractor shall prepare and maintain As-Built drawings. Submission of the As-Built drawings shall be made with each application for payment in accordance with the Agreement; and the final submittal of As-Built drawings, acceptable to the Engineer, shall be made before final payment.

B. The Contractor shall maintain a complete and accurate log of construction control and survey as the work progresses, including underground construction.

C. As construction progresses, update the plans to show measured locations of installed pipe, fittings, valves, taps, hydrants, manholes, services and other appurtenances of the completed work – both buried and above ground. Installed inlets, junction structures, curb, and roadwaythat is constructed as part of the work shall also be field measured. Horizontal and vertical locations of such items, as well as cover over pipe, shall be shown on a marked-up drawing to serve as the basis for preparing final As- Built drawings of thework.

D. See specification 01050 for As-Built survey requirements.

1.7 TEMPORARY STRUCTURES

A. Temporary Fences

If, during the course of the work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall, at his own expense, if so ordered by the Engineer, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced. The Engineer shall be solely responsible for the determination of the necessity for providing a temporary fence and the type of temporary fence to be used.

Contractor shall provide temporary fencing of the type and at the locations necessary to provide for security, protect public safety, or to meet the requirement of a permit for construction staging areas and areas of construction activity outside of the public right-of-way. All such temporary fencing shall be considered as an incidental cost of performing the work, and the cost of such fencing shall be allocated among the various bid items identified in the bid schedule.

1.8 TEMPORARY SERVICES

A. First Aid

The Contractor shall keep upon the site, at each location where work is in progress, a completely equipped first aid kit and shall provide readyaccess thereto at all times when people are employed on the work.

B. Temporary Sanitary Facilities

The Contractor shall provide adequate sanitary facilities for the use of those employed on the work site. Such facilities shall be made available prior to or on the date the first employees arrive on the work site, shall be properly secluded from public view, and shall be maintained during the progress of the work in such numbers and locations as maybe required.

The Contractor shall maintain the sanitary facilities in a satisfactory manner at all times, enforce their use, and shall prohibit the committing of any nuisance on the work site, in the road right-of-way. or any adjacent private property. The Health Department or Owner's Representative shall have the right to inspect the facilities at any time if they have reason to suspect they are not being properly maintained.

1.9 LINES AND GRADE

A. Grade

All work under this Contract shall be constructed in accordance with the lines and gradesshownon the Drawings, or as given by the Engineer. The full responsibility for keeping alignment and grade rest upon the Contractor.

The Contractor, prior to commencing of construction, shall have established bench marks and base line controlling points. The Contractor shall so place excavation and other materials as to cause no inconvenience in the use of the reference marks provided. He shall remove any obstructions placed by him contrary to this provision.

B. Surveys

The Contractor shall furnish and maintain, at his own expense, stakes and other such materials to establish all working or construction lines and grades, as required, and shall be solely responsible for the accuracy thereof. The cost of all labor, materials and incidentals required for the performance of any survey and utility location work shall be the responsibility of the Contractor and cost of this work is to be included within the Contractor's bid price (merged with bid line items).

C. Safeguarding Marks

The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of re-establishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.

The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of re-establishing them if disturbed or destroyed.

1.10 ADJACENT STRUCTURES AND LANDSCAPING

A. Protection of Structures

The Contractor shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress oft he work. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown on the Drawings or specified shall be included in the various Contract Items and no separate payments will be made therefor. Where such public and private property, structures of any kind and appurtenances thereto are not shown on the Drawings and when, in the opinion to avoid interference with the work, payment therefor will be made as provided for in the General Conditions.

Contractor is expressly advised that the protection of buildings structures, tunnels, tanks, pipelines, etc. and related work adjacent to and in the vicinity of his operations, wherever they may be, is solely his responsibility. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the Contractor.

Contractor shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by noted, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the Owner and to the satisfaction of the Engineer. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be given to the Engineer.

Prior to the beginning of any excavations the Contractor shall advise the Engineer and Owner’s Representative of all building or structures on which he intends to perform work or which performance of the project work will affect.

B. Protection of Trees

1. All trees and shrubs shall be adequately protected by the Contractor with boxes and otherwise and in accordance with ordinances governing the protection of trees. No excavated materials shall be placed so as to injure such trees or shrubs. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by him with new stock of similar size and age, at his proper season and at the sole expense of the Contractor.

2. Beneath trees or other surface structures, where possible, pipelines may be built in short tunnels, backfilled with excavated materials, except as otherwise specified, or the trees or structures carefully supported and protected from damage.

3. It is the intent of the drawings and specifications that every effort is taken to preserve and protect existing trees that the drawings indicate to remain. However, trees adjacent to or along the path of construction having branches that will unreasonably interfere with construction, or with the operation of construction equipment, may be selectively and minimally trimmed upon prior approval by the Owner's Representative. Trimming shall be performed in accordance with the National Arborist Association (NAA) Pruning Standards and in accordance with instructions provided by the Owner's Arborist. The costs of pruning, removal of prunings from the site, and disposal shall be included in the various Contract Items as incidental work pertaining thereto and no separate payment will be made for tree trimming.

4. At the discretion and direction of the Owner's Representative, any tree root systems to be disturbed by open cut methods of construction shall be root pruned prior the construction activity.

5. The Owner may order the Contractor, for the convenience of the Owner, to remove trees along the line or trench excavation. If so ordered the Owner will obtain any permits required for removal of trees. Such tree removal shall be paid for under the appropriate Contract Items.

C. Grass Areas

Grass areas shall be left in as good or better condition as before the starting of the work. Where sod is to be removed, it shall be carefully removed, and later replaced, or the area where sod has been removed shall be restored with newsod.

Areas which have construction equipment tire tracks, or depressions created by construction equipment or material, shall be considered as disturbed by

construction and restored appropriately to the satisfaction of the Owner's Representative.

D. Restoration of Fences

Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the Owner's Representative. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific Item is provided therefore, as part of the overhead cost of the work, and no additional payment will be made therefore.

E. Landscaped Areas

Landscaped areas outside of right-of-way, easements, or Owner property shall be protected from damage. Any bush, shrub, ornamental, or other landscaping plant or feature that is damaged or removed during the course of the work shall be restored or replaced, at no cost to the Owner, and to the satisfaction of the Owner's Representative.

Landscaping within right-of-way, easements, or Owner propertyshall be protected as described by the drawings or as directed by the Owner's Representative. In general, landscaping within these areas may be removed as reasonably necessary to perform the work. The limits of landscape removal shall be agreed upon by the Owner's Representative and Contractor prior to beginning work in the affected area, and all landscaping that is to remain shall be protected from damage. Unless otherwise shown on the drawings, landscaping removed within right-of-way, easements, or Owner property does not need to be replaced, but instead the area shall be restored by sodding. When directed by the Owner's Representative, these landscape areas may be restored by fine grading the area in preparation of replanting by others.

1.11 PROTECTION OF WORK AND PUBLIC

A. Barriers and Lights

The Contractor shall provide and maintain proper and adequate barricades, construction signs, torches, flashers, construction tapes, flagmen, guards or other traffic control devices as may be necessary to provide the required safety and protection to the public at and around the perimeter of the construction areas.

The Contractor shall provide suitable barricades, red lights, "danger" or "caution" or "street closed" signs and watchmen at all places where the work causes obstructions

to the normal traffic or constitutes in any way a hazard to the public. The Contractor shall comply with all City, County or State regulations.

B. Smoke Prevention

The Contractor shall use hard coal, coke, oil or gas as fuel for equipment generating steam. A strict compliance with ordinances regulating the production of emission of smoke will be required. No open fires will be permitted.

C. Noise

The Contractor shall eliminate noise to as great an extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. The Contractor shall strictly observe all local regulations and ordinances covering noise control. Furthermore, the Contractor shall meet the noise abatement performance standards as compiled in the City of Venice Noise Ordinance.

If mufflers and silencers cannot achieve the necessary noise reduction, other noise abatement procedures shall be instituted by the Contractor, such as installation of three-quarter inch (3/4") plywood baffles positioned to break off line-of-sight from the noise source to affected residences and/or commercial structures.

Except in the event of an emergency, no work shall be done outside of normal working hours. If the proper and efficient prosecution of the work requires operations during the night, the written permission of the Owner shall be obtained before starting such items of the work.

D. Access to Public Services

Neither the materials excavated nor the materials or equipment used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

E. Dust Prevention

The Contractor shall prevent dust nuisance from his operations or from traffic by keeping the roads and/or construction areas sprinkled with water at all times.

F. Safety

The CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The CONTRACTOR shall take all necessary precautions for the safety of and will provide the necessary protection to prevent damage, injury, or loss to:

1. All employees on the Work and other persons who may be affected by it.

2. All the Work and all materials or equipment to be incorporated, whether in storage on or off the Site. The Contractor shall assume all risk of loss for stored equipment or materials, irrespective of whether the Contractor has transferred the title of the stored equipment or materials to the Owner.
3. Other property at the Site or adjacent to it, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

It is the Contractor's responsibility to comply with the Occupational Safety and Health Administration excavation safety standards, 29 CFR 1926.650 Subpart P trench safety standards are in effect during the period of construction of the Project. In compliance with current State of Florida statutes, the Contractor or subcontractor performing trench excavation work on the Project shall comply with the applicable trench safety standards.

The Occupational Safety and Health Administration excavation safety standards, 29, CFR 1926.650 Subpart P trench safety standards are in effect during the period of construction of the Project. In compliance with current State of Florida statutes, the Contractor or subcontractor performing trench excavation work on the Project shall comply with the applicable trench safety standards.

G. Water Control

The Contractor shall provide for the disposal of surplus water (wellpoint, mud pumps, etc.,) and shall submit his plan to the Engineer for review, two (2) weeks prior to initiation and implementation, as any such plan may require approval from the proper authorities for the use of public or private lands or facilities for such disposal.

H. Pollution Control

The Contractor shall provide for adequate protection against polluting any private or public lands, streams, ponds, lakes, sanitary or storm drainage systems, etc., by the disposal of surplus materials in the form of solids or liquids or any other deleterious materials (fuels, oils, bitumens, etc.)

1.12 CUTTING AND PATCHING

A. The Contractor shall do all cutting, fitting or patching of his portion of the work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the Engineer and in accordance with the Drawings and Specifications. The work must be done by competent workmen skilled in the trade required by the restoration.

1.13 CLEANING

A. During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the Owner's Representative, such material, debris, or rubbish constitutes a nuisance or isobjectionable.

The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefor develops.

B. Final Cleaning

At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.

The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver such materials and equipment undamaged in a bright, clean, polished and new operating condition.

C. In the event that the timely clean up and restoration of the job site is not accomplished to the satisfaction of the Owner, the Owner shall make arrangements to affect the necessary clean up by others. The Contractor shall be charged for these costs through deductions in payment due the Contractor. If such action becomes necessary, the Owner shall not be responsible for the inadvertent removal from the work site of materials which the Contractor would not normally have disposed of had he affected the required clean up.

D. Upon completion of the project, and prior to a final inspection, the Contractor shall examine the project construction area to be certain all excess soil, debris and other unsightly materials have been removed and disposed of in a satisfactory manner. All areas of construction disturbed by the project work shall be restored as specified, and any areas outside the limits of construction and not designated for alteration shall be restored, as near as practicable, to their original or better condition.

1.14 MISCELLANEOUS

A. Protection against Siltation and Bank Erosion

1. The Contractor shall arrange his operations to minimize siltation and bank erosion on construction sites and on existing or proposed water courses, drainage ditches, wetlands and other areas of concern.

2. The Contractor, at his own expense, shall remove any siltation deposits and correct any erosion problems as directed by the Owner's Representative which results from his construction operations.

3. The Contractor shall be solely responsible for any fines resulting from the encroachment of any environmentally protected areas.

B. Protection of Wetland Areas

The Contractor shall properly dispose of all surplus material, including soil, in accordance with Local, State and Federal regulations. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Protection, Southwest Florida Water Management District, U.S. Army Corps of Engineers, etc.

C. Existing Facilities

The work shall be so conducted to maintain existing facilities in operation insofar as is possible. Requirements and schedules of operations for maintaining existing facilities in service during construction shall be as described in the Specific Provisions.

D. Use of Chemicals

All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturers' instructions.

E. Tree Removal

The Contractor shall be required to notify the Owner forty-eight (48) hours in advance of any removal of trees on the project. No clearing shall occur and no earth moving equipment shall be placed on-site until after the notice has been issued. The Contractor shall provide maintenance of the tree barricades and other preventive measures to protect the trees that are to remain.

F. Sanitary & Storm Sewer Systems

The Contractor shall be entirely responsible for the satisfactory replacement of storm sewer and installation of sanitary sewer systems in substantial conformance to the approved Drawings. It is strongly recommended that no roadway base or paving be constructed until the Contractor has performed lamping of these lines to his and the Engineer's satisfaction, and all storm sewer and sanitary sewer invert grades are verified in the field by the Owner. The lamping of lines and verification of

elevations in no way absolves the Contractor from any of his contractual obligations.

G. Related Permits

The Contractor recognizes that the Owner has applied for, and may have received, certain permits pertaining to the work. At the sole discretion of the Owner, the Owner may assign said permits to the Contractor and the Contractor shall accept said assignments upon such request from the Owner.

H. All work in the vicinity of open waters, wetlands or any jurisdictional area is to be performed in strict accordance with the environmental permits and their conditions. Erosion barriers, when shown on the construction Drawings, are the minimum required. If the Contractor's construction methods require that additional erosion control is necessaryto satisfy these permits, such controls shall be supplied, installed and maintained throughout the construction process by the Contractor at no additional cost to the Owner or Engineer.

It is the sole responsibility of the Contractor to submit, in a timely manner, any information, data, etc. which is required as a condition of a permit. Required information, data, etc. shall be submitted directly to the permitting agency by the Contractor withcopies to the Permittee and the Engineer. The Contractor will be held responsible for any fine(s) or other action resulting from a violation of permit conditions.

1.15 RESTORATION OF PROPERTY

A. Responsibility

All damage as a result of construction work done to existing structures, wetland areas, roadway pavement, driveways, other paved areas, fences, utilities, irrigation systems, traffic control devices and any other existing facility not specifically named herein, shall be repaired, restored or replaced by the Contractor, unless otherwise specified, at no additional cost to the Owner.

B. Temporary Repairs

All damage named in Paragraph A above shall be at least temporarily repaired, restored or replaced immediately following construction efforts at that location. Temporary restoration shall mean putting the affected area back into a safe, usable condition. In no case shall trenches remain open over night within a street right-of-way unless specific approval is granted by the Owner.

C. Permanent Repairs

All damage named in Paragraph A above shall be permanently repaired, restored, or replaced not later than the 30th calendar day following the completion of construction at that location unless otherwise stipulated. Damage that represents a potential safety issue or loss of service shall be repaired immediately. Permanent repairs will be accomplished in a professional workmanship-like manner in accordance with Specifications contained herein, or contract documents, if addressed.

D. Owner Retribution

In the event that the Contractor fails to make the permanent repairs within the time specified in Paragraph C above, the Owner, at its option, will, with its own resources or by contract with others, cause the repair, restoration, or replacement of the affected area to be accomplished. The costs of such work will then be deducted either from the next pay request or from any other monies owed the Contractor by the Owner.

E. In all areas disturbed by the work, the Contractor shall grade and restore the site to a condition as good or better than existed before construction. Sodded areas shall be sodded with sod matching the existing adjacent sod. Likewise unseeded and unsodded areas need only to be graded and leveled with existing soil except as directed by the Owner's Representative. All removed trees shall be replaced with trees matching the existing trees. Any drives, walks, pavements, structures, survey monuments, property corner markers, shrubs, or any other public or private property damaged or destroyed by the work shall be restored or replaced at the Contractor's expense.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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SECTION 01014

SUMMARY OF WORK

PART 1 – GENERAL

1.1 LOCATION OF WORK

A. Phase A of the project area is along Roberta Street bounded by Karen Drive to the north and Barbara Drive to the south.

B. Phase B of the project area is along Lillian Street bounded by Karen Drive to the north and Barbara Drive to the south.

C. Phase C of the project area is along Venetian Parkway bounded by Karen Drive to the north and Barbara Drive to the south.

D. Phase D of the project area is along Hope Street bounded by Karen Drive to the north and Barbara Drive to the south.

E. Phase E of the project area is along Elaine Street bounded by Karen Drive to the north and Barbara Drive to the south.

F. Phase F and Phase G of the project area is throughout the project bounded by Roberta Street to the west, Karen Drive to the north, Elaine Street to the east, and Barbara Drive to the south.

G. Phase H of the project of the project area is best described by referring to Drawing P-001 of the construction drawings.

1.2 WORK TO BE DONE

A. The Contractor shall furnish all labor, materials, equipment, tools, services and incidentals to complete all work required by these Specifications and as shown on the Drawings.

B. The Contractor shall perform the work complete, in place and ready for continuous service, and shall include repairs, testing, permits, clean-up, replacements and restoration required as a result of damages caused during this construction.

C. All materials, equipment, skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Drawings shall be furnished and installed by the Contractor without additional compensation, whether specifically indicated in the Contract Documents

or not.

D. The Contractor shall comply with all Municipal, County, State, Federal, and other codes which are applicable to the proposed construction work.

1.3 GENERAL DESCRIPTION OF WORK TO BE PERFORMED

A. The work of this Contract consists of furnishing all material, labor, equipment, etc., necessary for the general construction of the following, as shown on the Drawings and as specified herein.

1. New water service connections from the existing water main on Roberta Street;

2. New gravity sewer service laterals from a new gravity sewer on Roberta Street;

3. Approximately 1,010 LF of new gravity sewer along Roberta Street;

4. New water service connections from the existing water main on Lillian Street;

5. New gravity sewer service laterals from an existing gravity sewer on Lillian Street;

6. New water service connections from a new water main on Venetian Parkway;

7. Approximately 1,010 LF of new water main on Venetian Parkway;

8. New gravity sewer service laterals from a new gravity sewer on Venetian Parkway;

9. Approximately 1,000 LF of new gravity sewer along Venetian Parkway;

10. New water service connections from a new water main on Hope Street;

11. Approximately 1,005 LF of new water main on Hope Street;

12. New gravity sewer service laterals from a new gravity sewer on Hope Street from Barbara Drive to 1023/1024 Hope Street;

13. New gravity sewer service laterals from an existing gravity sewer on Hope Street from 1031/1032 Hope Street north to Karen Drive;

14. Approximately 260 LF of new gravity sewer along Hope Street;

15. New water service connections from an existing water main on Elaine Street;

16. New gravity sewer service laterals from a new gravity sewer on Elaine Street;

17. Approximately 1,500 LF of new gravity sewer along Elaine Street;

18. New water service connections from an existing water main on Barbara Drive;

19. New gravity sewer service laterals from a new gravity sewer on Barbara Drive;

20. Approximately 185 LF of new gravity sewer along Barbara Drive;

21. Abandonment of rear lot water mains within the project area;

22. Abandonment of rear lot gravity sewers within the project area;

23. New gravity sewer service lateral for the residence of 1000 Pinebrook Road;

24. Abandonment of existing gravity sewer service later for the residence of 1000 Pinebrook Road; and

25. Pavement restoration within the project area.

1.4 CONSTRUCTION ACTIVITIES

A. Specific requirements for the above activities are outlined in the respective Specification sections and on the Drawings.

B. Contractor shall ensure that, prior to testing or start-up of any component, all required thrust restraint and associated safety-related facilities are in place.

C. All work shall be executed in accordance with the project permits.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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SECTION 01030

SPECIAL PROJECT PROCEDURES

PART 1 – GENERAL

1.1 WORKMANSHIP, MATERIAL AND EQUIPMENT

A. When a particular product if specified or called for, it is intended and shall be understood that the proposal tendered by the Contractor included those products in his bid. Should the Contractor desire products equal to those specified, the Contractor shall furnish information as described in the Standard General Conditions. The alternate product or products submitted by the Contractor shall meet the requirements of the Specifications and shall, in all respects, be equal to the products specified by name herein.

B. All apparatus, mechanism, equipment, machinery and manufactured articles for incorporation into the Work shall be the new and unused standard products of recognized reputable manufacturers.

C. Contractor must provide his own disposal of excavation that he removes from the site.

1.2 CONTRACTOR PROVIDED STAGING AREA

A. The Work of this project is to be performed in a congested area that affords minimal and limited space that the Contractor may use to stage construction activities such as material storage, parking, or tool & supply storage. The Contractor shall secure staging area(s) as he may require and the cost shall be included as part of the price bid for the work.

B. Appropriate temporary security fencing and effective erosion control measures shall be provided for the staging area(s). In particular, effective measures shall be employed to prevent soil, mud, or dust from being tracked onto roadway surfaces between the site of the work and the staging area. The cost to provide and maintain temporary security fencing and erosion control measures, and to clean debris tracked onto roadways, shall be considered an incidental project cost shall not be separately measured for payment.

C. When the Work of this project is completed, and before final payment is made to the Contractor, the staging area shall be restored according to the agreement between the Contractor and the staging area owner including removal of temporary fencing and erosion control measures. Roadway and sidewalk damage that may have occurred between the project site and staging area because of construction equipment operation between the two sites shall be repaired, and the roadways and sidewalks shall be cleaned, to the satisfaction of the Owner's Representative and

Owner. The Owner may withhold payment retainage to the Contractor until the requirements of this paragraph are satisfied.

1.3 CONNECTIONS TO EXISTING SYSTEMS

A. The Contractor shall perform all work necessary to locate, excavate, restrain or confirm restraint, and prepare for connections to the existing systems, as shown on the Construction Drawings. The cost for this work and for the actual connection to the existing systems shall be included in the various prices bid for the Work, except where specifically indicated as a separate Item, and shall not result in any additional cost to the Owner.

B. The Contractor shall install, pressure test, disinfect, and wait for clearance from the Health Department or FDEP for the new water main prior to transferring services over to the new main and taking the existing water main out of service. The maximum duration that the water main can be temporarily taken out-of-service shall be as specified herein. The Contractor shall plan his work accordingly so as to comply with these requirements.

C. The Contractor shall provide, install and test any required piping and valves, including tapping sleeves and valves. The Contractor shall make the tap in the presence of City Utilities staff. Pressure testing shall take place in the presence of the Owner's Representative. A minimum of 24 hours' notice shall be given to schedule tapping and testing.

D. The Contractor shall provide the Owner's Project Manager with written notice of any requirement to shut down the system at least 72 hours in advance.

E. It shall be noted that existing water mains can be shut down for a maximum of 3 hours.

1.4 PROVISIONS FOR CONTROL OF EROSION

A. Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the state. Control measures must be adequate to assure that turbidity in the receiving water will not be increased more than 10 nephelometric turbidity units (NTU), or as otherwise required by the state or other controlling body, in water used for public water supply or fish unless limits have been established for the particular water. In surface water used for other purposes, the turbidity must not exceed 25 NTU unless otherwise permitted. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion.

B. Comply with the requirements of the EPA-NPDES general permit for stormwater discharges and the stormwater pollution prevention plan developed for the project.

1.5 WARRANTIES

A. The Contractor and the materials manufacturers shall warranty all workmanship and materials for a minimum period of twelve (12) months. Warranty period shall commence on the date of Final Acceptance by the Owner.

B. If, within the warranty period, repairs or changes are required in connection with guaranteed work which, in the opinion of the Engineer, is rendered necessary as the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, the Contractor shall, promptly upon receipt of notice from the Owner and without expense to the Owner, do the following:

1. Place in satisfactory condition in every particular all of such warranted work and correct all defects herein.

2. Make good all damage which, in the opinion of the Engineer, is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract.

3. Make good any work or material or site disturbed in fulfilling any such guarantee.

C. If the Contractor, after notice, fails within ten (10) days to proceed to comply with the terms of this warranty, the Owner may have the defects corrected, and the Contractor and his surety shall be liable for all expense incurred, provided, however, that in case of an emergency where, in the opinion of the Owner, delay would cause loss or damage, repairs may be started without notice being givento the Contractor and the Contractor shall pay the cost thereof.

D. All special guarantees or warranties applicable to specific parts of the work, as may be stipulated in the Contract Specifications or other papers forming a part of this Contract, shall be subject to the terms of this paragraph during the first year of life of each such guarantee. All special guarantees and manufacturers' warranties shall be assembled by the Contractor and delivered to the Engineer, along with a summary list thereof, before the acceptance of the Work.

E. The Contractor's twelve (12) month warranty or guarantee period shall be part of the project performance bond.

1.6 CONSTRUCTION CONDITIONS

A. The Contractor shall strictly adhere to the specific 2010 Florida Plumbing Code requirements of the governmental unit(s) or agency(ies) having jurisdiction over the work. Wherever there is a difference in the requirements of the 2010 Florida Plumbing Code and these Specifications, the more stringent shall apply.

1.7 PUBLIC NUISANCE

A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.

B. Trash accumulation, including accumulation of lunch-break refuse, shall be avoided. The Contractor shall provide appropriate containers for collecting rubbish and the Contractor's superintendent shall enforce their use. The containers shall also be regularly emptied.

C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.8 HAZARDOUS LOCATIONS

A. Contractor shall perform work in accordance with OSHA, state and local safety requirements.

1.9 RELOCATIONS

A. The Contractor shall be responsible for the relocation of structures, including but not limited to: utility poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work as set out on the Drawings. The cost of all such relocations shall be included in the bid.

1.10 SUSPENSION OF WORK DUE TO WEATHER

A. During inclement weather, all work that could be damaged or rendered inferior by such weather conditions shall be suspended. The orders and decisions of the Engineer as to suspensions shall be final and binding. The ability to issue such an order shall not be interpreted as a requirement to do so. During suspension of the work for any cause, the work shall be suitably covered and protected so as to preserve it from injury by the weather or otherwise; and, if the Owner's Representative shall so direct, rubbish and surplus materials shall be removed. Throughout the duration of the Work, the Contractor shall provide temporary connections between new portions of the storm drainage system and existing portions of the storm drainage system in order to allow drainage of storm water runoff from the work area consistent with the requirements for providing effective erosion control.

1.11 HURRICANE PREPAREDNESS PLAN

A. Within 30 days of the date of Notice to Proceed, the Contractor shall submit to the Engineer and Owner a Hurricane Preparedness Plan. The Plan should outline the necessary measures that the Contractor proposes to perform at no additional cost to the Owner in case of a hurricane warning.

B. In the event of inclement weather, or whenever the Owner's Representative or Engineer shall direct; the Contractor shall carefully protect the Work and materials against damage or injury from the weather. If, in the opinion of Owner's Representative or Engineer, any portion of Work or material has been damaged or injured by reason of failure on the part of the Contractor or subcontractors to set protect the Work, such Work and materials shall be removed and replaced at the expense of the Contractor.

1.12 SALVAGE

A. Any existing equipment or material including, but not limited to, valves, pipes, fittings, couplings, etc., which is removed or replaced as a result of construction under this project may be designated as necessary and delivered, to the Owner at a location directed by the Owner, at the Contractor's expense. Removed material not designated as salvage, or that the Engineer decides is not to salvage, shall become the property of the Contractor, removed from the site, and properly disposed at the Contractor's expense.

1.13 PERMITS

A. Upon notice of award, the Contractor shall immediately apply for all applicable permits not previously obtained by the Owner to do the work from the appropriate governmental agency or agencies. This includes a City Building Permit for all work to be performed on private property. No work shall commence until all applicable permits have been obtained and copies delivered to the Owner. The costs for obtaining all permits shall be borne by the Contractor.

B. The Contractor shall be responsible for complying with all permit conditions for any permits that the Owner has already obtained and are attached to these specifications.

C. The Owner has obtained, or is actively in the process of obtaining, the following permits for the Work:

1. Florida Department of Environmental Protection/Sarasota County Health Department Public Water System Construction Permit.
2. Florida Department of Environmental Protection Wastewater Construction Permit

1.14 PUMPING

A. The Contractor shall, for the duration of the contract, and with his own equipment, pump out stormwater runoff or groundwater which may flow, seep or leak into excavations.

B. Contractor shall provide all labor, material, and equipment necessary to provide a pump discharge that is located and made in a manner acceptable to the Owner's Representative; that meets all permit and environmental protection requirements; and meets all federal, state, and local laws. At no time will the Contractor be

allowed to pump sewage or polluted water into storm drains, streams, open channels, or onto streets during the course of the work. The Contractor shall also provide all necessary noise suppression devices to minimize pump noise and comply with the noise requirements of the Contract Documents.

1.15 NOTIFICATION OF WORK ON EXISTING FACILITIES

A. Before commencing work on any of the existing structures or equipment, the Contractor shall notify the Owner/Engineer, in writing, at least 10 calendar days in advance of the date he proposes to commence such work.

B. Contractor shall notify the various permitting and regulatory agencies prior to commencing the work permitted and regulated by the affected permits in accordance with the conditions of the permit.

1.16 EXISTING UNDERGROUND PIPING, STRUCTURES AND UTILITIES

A. The attention of the Contractor is drawn to the fact that during excavation, the possibility exists that the Contractor will encounter various water, gas, telephone, electrical, service laterals, irrigation systems or other utility lines not shown on the Drawings. The Contractor shall exercise extreme care before and during excavation to locate and flag these lines so as to avoid damage thereto. Should damage occur to an existing line, the Contractor shall immediately contact the utility and the Owner. If the repair is to be completed by the Contractor it shall be carried out in a timely and quality manner. Costs associated with such damage shall be borne by the Contractor at no additional cost to the Owner.

B. It is the responsibility of the Contractor to ensure that all utility or other poles, the stability of which may be endangered by the close proximity of excavation, are temporarily supported in position while work proceeds in the vicinity of the pole and that utility or other companies concerned be given reasonable advance notice of any such excavation by the Contractor.

C. The locations of existing utilities are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping to be encountered. Encountering existing utilities at different depths or locations than shown on the drawings shall not be cause for additional costs to the Owner.

D. The existing piping and utilities that interfere with new construction shall be rerouted as shown, specified or required. The Contractor shall excavate sufficiently ahead of the proposed work to predict potential conflicts. Before any piping and utilities not shown on the Drawings are disturbed, the Contractor shall immediately notify the Owner's Representative and Engineer of the location of the pipeline or utility and shall reroute or relocate the pipeline or utility as directed.

E. The Contractor shall exercise care in any excavation to locate all existing piping and utilities. All utilities that do not interfere with completed work shall be carefully protected against damage. Any existing utilities damaged in any way by the

Contractor shall be restored or replaced by the Contractor at his expense.

F. It is intended that wherever existing utilities such as water, gas, telephone, electrical, or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Drawings. However, when in the opinion of the Owner or Engineer this procedure is not feasible, the Engineer may direct the use of fittings for the utility crossing. The Contractor shall verify utility crossings with test pits prior to construction as required by the Engineer.

G. The contractor shall preserve existing sanitary sewers without interruption while performing the work of the project. When the drawings indicate that all or a portion of a service lateral is to be replaced, the Contractor shall accomplish the work without disruption of service, backup in the structure served, or leakage of sewage into the excavation.

1.17 JOB SITE SECURITY

A. The Contractor shall properly protect the work area to prevent the public from entering the work area. The Contractor shall furnish and erect such barricades, fences, lights, and danger signals and shall provide such other precautionary measures for the protection of persons or property and of the work as necessary. Barricades/fencing shall be painted or have a reflective color that will be visible at night. From sunset to sunrise, the Contractor shall furnish and maintain at least one light at each barricade/fence and sufficient numbers of barricades/fencing shall be erected to keep vehicles or pedestrians from entering on or into any work under construction.

B. The Contractor will be held responsible for all damage to the work due to failure of barricades, fencing signs, and lights to protect it and whenever evidence is found of such damage, the Contractor shall immediately remove the damaged portion and replace it at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights shall not cease until the project has been accepted by the Owner.

1.18 NEW SERVICE CONNECTIONS

A. The Work requires that new services be installed to the lots shown on the drawings. In most cases, this shall include a new service from the new water main to the new meter box, installing a new, Owner-supplied meter in the new meter box and a new service line from the meter box to the building on the lot.

B. In some cases, as shown on the Drawings, the existing meter box and meter, and the line from the meter box to the building will remain. In such cases, the Work involves only running a new service line from the new water main or replacement water main to the existing meter box and connecting into the existing meter with a new curb stop.

C. The Contractor’s pricing for installing the new service lines on private property shall allow for installation by either open cut or by horizontal directional drill based on direction from the Owner and feedback from the property owner. In either case,

all disturbed areas shall be fully restored.

D. The City has instituted a new Cross Connection Control Program (CCCP). A copy of this Program is available from the City's Utilities Web Page and a flow chart illustrating when backflow protection devices are necessary is provided at the end of this specification. Under the new CCCP, the Contractor, via his licensed plumber, shall be responsible for installing backflow prevention devices and thermal expansion/pressure relief valves on the new service line when required. This will entail either relocating the existing backflow device and pressure relief valve (if necessary, depending on the existing pressure relief valve's location), or furnishing and installing a new backflow device and pressure relief valve.

All relocated and new RPZ assemblies shall be tested after installation and certified by a contractor hired licensed backflow testing professional prior to activating the new service. Dual check valve assemblies do not need to be tested.

E. After the new water main and street services are tested, disinfected and cleared by the Health Department/FDEP, the Contractor shall transfer each affected lot's service to the new water main. Unless the Drawings call for connecting to an existing meter, this shall include:

1. Furnishing and installing a new meter box and a new service from the meter box to the existing water service connection on the building being served or to the service line at the existing meter to be removed. New service laterals shall be Schedule 40 PVC and shall match the nominal size of the new street lateral. All above ground pipe shall be Type L hard drawn copper or Schedule 40 brass.

2. Installing a new, Owner provided, meter in the new meter box. Piping in the meter box shall include all accessories necessary to connect the meter, including reducing fittings if required to match the service line diameter.

3. Temporarily discontinuing water service to the affected lot, installing the backflow prevention device (where applicable), and connecting the new service lateral to the meter and to the building. The trench for the new service from the meter to the building shall not be backfilled until the Owner's Plumbing Inspector inspects the line visually for leaks and passes the line.

4. Restoring water service to the affected building by placing the new service line in to service.

5. If not connecting to an existing meter, removing the existing meter box and backfilling and restoring the remaining hole.

6. If not connecting to an existing meter, or the discharge of the existing meter, cutting and capping the old service line at the building, a minimum of 6 inches below ground.

F. All work conducted downstream of the meter and on private property shall be completed by a licensed plumber hired by the Contractor and properly registered to do work in the City. Work on private property shall not be completed by the Contractor's personnel.

G. Commercial Fire Services:

1. Commercial fire services shall be relocated as shown on the Drawings. The existing backflow prevention device and meter, if any, shall be relocated to the new service. The new fire service shall be the same size as the existing fire service.

2. All piping and accessories on the relocated fire service shall meet the requirements of and be installed and tested in accordance with NFPA 24.

3. All fire service lines less than 4" diameter shall be Type L hard drawn seamless copper. Fire service lines 4" diameter and greater shall be C-900 PVC or ductile iron pipe with a pressure rating no less than 200 psi. Above ground piping shall be copper or ductile iron as described above. Pipe shall be installed with a 3 feet minimum depth of cover. Fittings on pipe 4" and greater shall be ductile iron. All joints shall be restrained.

4. If there is an existing post indicator valve, the new service shall be tied into the existing service upstream of the valve.

5. All fire service piping shall be flushed and pressure tested by the licensed installing contractor at 200 psi in accordance with NFPA 24. Pressure testing shall take place with all pipe joints exposed and in the presence of the City's Fire Inspector. All necessary reporting shall be provided in accordance with the City Fire Marshall's requirements.

6. Fire service piping shall be installed by a licensed contractor or plumber with a minimum Class 5 license from the State Fire Marshall.

H. Installation of the new water services on private property may commence while the new water mains are being installed so that the services are ready to be connected once the new water mains are cleared, provided that water service to the property is not interrupted other than to make the final connection.

I. Following connection of the lot to the new water service, the Contractor's plumber shall coordinate with the building/home owner to enter the building, remove aerators on individual faucets, and flush the internal plumbing system. Timing of this work shall be coordinated with the building/homeowner and Owner's Representative. Completion of this effort will not be required if it is not desired by the building/home owner.

J. Some irrigation meters and services may not be shown on the drawings. If there is an existing irrigation meter, a new irrigation water service will be required and the contractor's plumber will be responsible for connecting the new irrigation water service to the existing irrigation system. The approach for backflow prevention devices shall be the same as that for domestic water services. Payment for the new irrigation service and meter will be made at the contract unit price for the same size water service.

K. The Owner has obtained written Agreements from property owners for the work to be completed on private property. Copies will be provided to the Contractor. The new services on private property shall be installed, in general, along the routes and connected to the buildings as shown on the Drawings. Any proposed changes to the service routes or connection points, including any proposed changes by the property owner, shall be provided to and approved by the Owner and Engineer prior to constructing the service.

L. Property owners and/or residents shall be notified at least 72 hours in advance of work being conducted on their property and turning off water service. Once the work begins on a private lot, work, including complete restoration of the property, shall continue and be completed within 5 consecutive working days. Trenches or holes shall not remain open overnight or over the weekend. If necessary to allow for Building Department inspection, the trench for the new water service may remain open overnight for one night but shall be covered with plywood. The Contractor shall restore or repair property per the Owner's standard details and to equal or better than original condition.

M. All pipe, fittings and accessories shall be lead-free.

1.19 DOOR HANGERS

A. The Contractor shall develop and distribute door hangers to notify residents and businesses of the impending work on their street. The language to be used in the door hanger shall be submitted to the Owner for approval prior to their production.

B. Door hangers shall be placed on the front door of each affected property on a given street one week prior to commencing work.

C. When necessary, Boil/Rescind notices will be provided by the Owner for distribution by the Contractor. The Contractor shall distribute boil water notices a minimum of 24 hours before shutdowns and rescind notices immediately following clearance of the affected mains.

1.20 RESTORATION

A. The Contractor shall restore disturbed areas progressively as the work continues. No more than 1,200 linear feet of work area along the water main lengths shall remain unrestored at any given time.

B. Temporary restoration of all disturbed asphalt shall consist of a completed base layer as shown on the drawings and a temporary asphalt patch evenly matching the edges of the surrounding pavement. Temporary restoration shall be completed within 5 working days upon backfill and compaction of the excavation/pipe trench. Final restoration shall consist of milling and overlaying the temporary patch and surrounding asphalt as shown on the drawings. Temporary patches consisting of only compacted base material will not be accepted.

C. Where required, sidewalk removal shall be in whole panels. All removed sidewalk panels shall be replaced within 5 working days of removal, even if temporary, to maintain pedestrian safety.

D. No open trenches shall be allowed during non-working hours for all work in this project.

E. Good housekeeping on this project is extremely important and the Contractor will be responsible for keeping the construction site neat and clean, with debris being removed daily as the work progresses or as otherwise directed by the Owner's Representative. Good housekeeping at the job site shall include: Removing all tools and temporary structures, dirt, rubbish, etc.; hauling all excess dirt, rock, etc., from excavations to a dump provided by the Contractor; and all clean up shall be accomplished to the satisfaction of the Owner's Representative. Dust shall be controlled daily as may be required. Immediately after construction completion in an area or part thereof (including restoration), barricades, construction equipment and surplus and discarded materials shall be removed by the Contractor.

F. In the event that the timely clean up and restoration of the job site is not accomplished to the satisfaction of the Owner or Owner's Representative, the Owner will make arrangements to affect the necessary clean up by others. The Contractor shall be charged for these costs through deductions in payment due the contractor. If such action becomes necessary, the Owner shall not be responsible for the inadvertent removal from the work site of materials which the Contractor would not normally have disposed of had he affected the required clean up.

G. The Owner reserves the right to stop new construction until the provisions of this Article are satisfied with no award of additional contract time or cost.

H. See 1.33 Construction Phasing for additional requirements.

1.21 SHUTDOWN OF EXISTING WATER MAINS

A. The Contractor shall submit an Abandonment and Tie-Ins Shut Down plan for abandoning existing water mains and for cutting new water mains into the existing water system. The plans should be colorized (highlighted) showing:

1. Sections of water mains to be abandoned;
2. Valves that will need to be closed in order to abandon the mains or make a tie-in;
3. All water mains that will be out of service as a result of closing the valves and the properties whose water service will be temporarily shut down;
4. Locations of grout injection and discharge points.

The plan may be submitted individually for each planned shut-down. Each plan shall be submitted a minimum of 2 weeks in advance of each shut down.

B. When the Contractor shuts down and depressurizes an existing water main with live service connections as part of his construction efforts, he shall be responsible for notifying residents a minimum of 48 hours in advance of the shutdown.

C. Samples for bacterial analysis shall be taken from the depressurized existing water main by a certified sampler from the Contractor's independent laboratory and submitted for analysis to said laboratory. Two (2) consecutive day approved samples shall be required in order to place the depressurized main back into service. The period between such series of samples shall be a minimum of 24 hours. Prior to placing the water main back into service, the City will develop Boil Water Notices and the Contractor shall distribute the notices to the affected properties. Notices to commercial properties shall be hand delivered to a representative inside the affected building. A copy of the required City of Venice Boil Water Notice forms is provided as Attachment No. 2 to these technical specifications.

D. City crews are not available for scheduled shutdowns before 8:00 AM or after 3:00 PM.

1.22 ABANDONING EXISTING WATER MAINS

A. All abandoned water mains 3" and greater shall be pumped full of 100 psi excavatable flowable fill in accordance with FDOT Standard Specifications section 121. A pumpable grout product with strength equivalent to the flowable fill will also be considered acceptable.

B. Abandonment of existing mains, including removal and/or manipulation of existing valves in lines to be abandoned, shall not commence until all lots connected to the existing main are actively being served by their new service lines.

1.23 STORMWATER POLLUTION PREVENTION PLAN AND NOTICE OF INTENT

A. Prior to the start of construction, the Contractor shall provide a signed Stormwater Pollution Prevention Plan and file the Notice of Intent to Discharge Stormwater from Construction Activities with the FDEP along with the associated fee. Compensation for the fee will be paid for from the contract's permitting allowance.

1.24 COORDINATION WITH THE CITY BUILDING DEPARTMENT

A. The City Building Department will issue a master Plumbing Permit for all involved private properties, and an $80.00 fee must be paid for each property. A Permit Fee Allowance of $25,000 is included in the contract in order to reimburse the Contractor for these fees.

B. It is anticipated that the inspection and approval process with the Building Department will be as follows:

1. The Contractor will fill in the required Minor Work Plumbing Permit and a Fire Service Permit (if applicable) application and pay the $80 fee for each property. The Building Department will help the Contractor in doing duplicate permit applications.

2. After installing the new service lines between the meter and the building, call in for an inspection prior to backfilling the trench. The plumber shall

provide the Building Department a minimum of 24-hours' notice for inspections. If the service is found to be acceptable by the Building Department inspector, the trench may be backfilled and the new service line may be activated. If the inspector finds deficiencies in the service line, the plumber shall correct the deficiencies and then call for a re-inspection.

3. The plumber shall notify the Building Department once the work on each private property is completed for final plumbing inspection. This inspection will include observing the new service line visually for leaks. The service line trench shall therefore not be backfilled until the inspection is completed.

4. When work on all lots is completed, the plumber shall file the appropriate closeout paperwork with the Building Department.

1.25 NOISE ORDINANCE

A. Contractors shall note that Section 34-35(6) of the City of Venice Code of Ordinances prohibits operating or causing the operation of any tools used in construction, drilling, repair, alteration or demolition work between the hours of 9:00 p.m. and 6:00 a.m. on weekdays, or between 9:00 p.m. and 9:00 a.m. on weekends or holidays, in or within 50 yards of any residential area or noise-sensitive zone, except for emergency work by public service utilities or by other variance approved by a board or commission of the city council empowered to grant variances.

B. Maximum allowable sound levels shall be per Section 34-36 of the City of Venice Code of Ordinances.

1.26 PERMITTED WORKING HOURS

A. Under normal circumstances, work under this contract shall be permitted only on weekdays, Monday through Friday, from 7:00am to 5:00pm. Except in the event of an emergency involving the safety of public or protection of property, no work shall be permitted on weekends or recognized holidays without written permission from the City Engineer. Emergency work must be reported to the City Engineer in writing, at the next normal work period. Holidays recognized by the City of Venice and applicable to the terms of this contract are as follows:

1.	New Years Day	January 1
2.	Martin Luther King, Jr. Day	Third Monday in January
3.	President's Day	Third Monday in February
4.	Memorial Day	Last Monday in May
5.	Independence Day	July 4
6.	Labor Day	First Monday in September
7.	Veteran's Day (observed)	November 11
8.	Thanksgiving Day	4th Thursday in November
9.	Day after Thanksgiving Day	4th Friday in November
10.	Christmas Even Day	December 24
11.	Christmas Day	December 25

1.27 CLEARANCE OF NEW MAINS

A. It is the intent of these documents that the new water mains on each street be cleared and placed into service as they are completed. To that effect, ±two (2) separate partial clearances are anticipated. See specification 02622, Potable Water Mains, for clearance requirements.

B. In order to clear the mains to place them into service, the Contractor shall provide the Engineer with a complete clearance package containing passing pressure/leakage and bacteriological test results and signed and sealed As-Built surveys of the mains being cleared. The Engineer will assemble the certification package and submit it to the Health Department for approval. The Contractor shall anticipate a minimum of 10 working days between the date acceptable bacteriological tests and As- Built surveys are provided to the Engineer and the date that the Health Department provides a Letter of Clearance to place the new main into service.

1.28 CONTRACTOR'S AS-BUILT REQUIREMENTS

A. The Contractor shall note the special GIS As-Built requirements described in specification 01050, Field Engineering and Survey.

1.29 HORIZONTAL DIRECTIONAL DRILL PIPE LAYOUT

A. The Drawings show potential directional drill pit locations. The Contractor is free to locate the drill and receiving pits as necessary to facilitate the work. However, blocking roadways and driveways shall be minimized, especially when stringing out and fusing the pipe. No roadway or driveway shall be blocked without alternative access around the blockage being provided. The Contractor shall provide Maintenance of Traffic, including detour signs and Maintenance of Pedestrian Traffic, as required to maintain access around all blocked roads and driveways.

1.30 CONSTRUCTION SCHEDULE

A. The Contractor shall refer to specification 01310 regarding construction schedule submittal requirements. Mobilization will not be permitted to take place until a critical path initial schedule meeting the requirements of that specification has been submitted and approved.

1.31 UTILITY LOCATES

A. On past projects, the City has had issues with Contractors calling in for locates for the entire project area at one time. As a result, the age of the locates exceeded 30 days when work on many streets was actually started, requiring that the locates be repeated. In many instances, the repeated locates were for the remainder of the project and the age issue repeated, resulting in the existing utilities on many streets being located several times over the course of the project.

B. To avoid this issue, the contractor shall not call in for locates along any particular street more than 14 days before work on that street is to begin.

1.32 CONSTRUCTION AND DEMOLITION DEBRIS

A. Contractor and all sub-contractors shall use City of Venice solid waste services for the collection, transport and disposal of commercial solid waste and construction and demolition debris. Please contact the City of Venice Public Works Department at 941-486-2422 to schedule service.

1.33 CONSTRUCTION PHASING

A. The project shall be phased to minimize impacts to residents within the Project Limits. In general construction shall be limited to one street at a time. The Contractor will not be allowed to progress from one street to the next until the proposed improvements are Functionally Complete (installed, backfilled, tested, cleared for use, and placed into service and ROW to ROW restoration is complete including landscape/sod and roadway lime rock and first lift of asphalt placement). The Contractor shall have 30 calendar days to complete the restoration (less final lift of asphalt) on each street once the street is deemed functionally complete. Within 10 days of receiving the Notice to Proceed, the Contractor shall prepare a CPM schedule showing phasing sequence by street for completing the project within the required project duration. This schedule information will be shared with residents and shall not be changed without the City of Venice's written authorization. The project has been separated into the phases.

B. For each phase all Private Sanitary Sewer Laterals and Water Service Lines shall:

- Have their routes identified and accepted by the private property owners;
- Be installed, inspected and pass the City Building Inspection;
- Have all sod and landscaping along the pipeline route restored (must be completed within 72 hours after the gravity sewer has passed the City's Building Inspection), except for tie-in locations, which shall be made safe until restoration is completed; and
- Be ready for connection to the homes and new utilities in the Right-of-Way, then placement into service by the Contractor's plumber.

C. Private water service lines will not be subject to pressure testing. Ends shall be capped until new water main has been placed in service, new meter and backflow have been installed, and Contractor has demonstrated to the City or its designees that the water service for the residence is ready to be switched over. Services shall be connected to the new water main immediately after it has been cleared for service by the Department of Health. All abandoned water services shall be disconnected from the existing main and filled with grout.

D. Upon completion and before proceeding to the next phase, the Contractor shall request a Phase functional completion notification letter from the City, CEI, and EOR before commencing to the next Phase. **Functional Completion shall be defined for each of**

the utility types listed below accordingly:

Sanitary Sewer System – The gravity main and all sanitary sewer laterals in the Right-of-Way and private property shall be installed and connected as intended by the plans, backfilled, tested, cleared for use, and placed into service, and accepted by issuance of a Functional Completion notification and as described in each Phase below.

Water Services – All water services in the Right-of-Way and private property shall be installed, backfilled, flushed, connected to new meter and backflow, cleared for use, placed into service and operating as intended, restoration completed as detailed below in each Phase, and accepted by issuance of a Phase Functional Completion notification.

Water System – All water main, fittings, valves, air release valves, caps, plugs, thrust blocks, restraints and appurtenances as well as water services in the Right-of-Way and private property shall be installed, backfilled, pressure tested, flushed, chlorinated, cleared for use, connected to new meter and backflow, placed into service and operating as intended, restoration completed as detailed below in each Phase, and accepted by issuance of a Phase Functional Completion notification.

Stormwater System – All stormwater structures and pipe shall be installed, backfilled, cleaned, and placed into service and operating as intended.

Phase Functional Completion – Functional Completion of all Sanitary Sewer, Water System, and Stormwater improvements, all restoration of Right-of-Way and Private Property, and first Lift of Asphalt as acceptable to the Owner, CEI, and Engineer of Record. For Phases F, G, and H, Function Completion Shall be the Completed Work as described and intended in the respective phase descriptions.

E. See suggested construction order below:

Phase A – Roberta Street ~ STA 0+00 to 11+50;
Phase B – Lillian Street ~ STA 21+00 to 31+50;
Phase C – Venetian Parkway ~ Station 43+75 to 54+00;
Phase D – Hope Street ~ STA 61+00 to 71+50;
Phase E – Elaine Street ~ STA 82+40 to 94+00;
Phase F – Abandonment of Existing Utilities ~ STA 0+00 to 94+00
Phase G – Final Lift of Asphalt ~ STA 0+00 to 94+00; and
Phase H – Additional Paving ~ Plan Sheet P 001.

1. Phase A – Roberta Street ~ STA 0+00 to 11+50:

A. Phase A-1: Sanitary sewer system improvements and private water service lines along Roberta Street from Barbara Drive to Karen Drive (STA ~0+00 to 11+50). This Phase shall include:

1) New sanitary sewer system including all manholes, gravity mains, sanitary sewer

laterals, temporary and permanent connections to existing systems, modifications to existing/proposed systems, and private wastewater service connection relocation. Sanitary sewer system shall be installed beginning at the deepest section working towards the shallowest sections (north to south from Karen Drive to Barbara Drive). All existing manhole connections/service laterals to be abandoned and that are no receiving flow shall be plugged/grouted and sealed as required by the Contract Documents after all sewer services have been transferred. Abandoned service laterals from other phases that couldn't previously be grouted or were connected to an active system shall also be grouted.

Upon completion and before proceeding to the next phase, the Contractor shall request a Phase A-1 functional completion notification letter from the City, CEI, and EOR and Phase A-2 may begin.

B. Phase A-2: Water service installation along Roberta Street from Barbara Drive to Karen Drive (STA ~0+00 to 11+50). This Phase shall include:

1) New Fire Hydrant, removal of existing hydrant, and all water services including completion of private side water service relocation, meters, meter boxes, backflow preventers, valves, flushing, and testing of the proposed water services and associated appurtenances.

2) The existing water main between 1011 and 1015 Roberta shall also be abandoned in place per the plans.

3) Restoration of the work zone: trench backfilled and compacted to grade; temporary asphalt patching on all roadway crossings (including water service crossings); compacted lime rock on all driveway crossings (driveways are not to be completely removed within the ROW as part of this Phase); mailbox removal/replacement; temporary roadway/crosswalk striping.

The water services shall be functionally complete (installed, backfilled, flushed, connected to the new meter and backflow, cleared for use, and placed into service) and restoration as detailed above complete and accepted by issuance of a Phase A-2 functional completion notification by the Owner, CEI, and EOR before Phase A-4 and Phase B-1 may begin.

C. Phase A-3: Stormwater improvements along Roberta Street from Barbara Drive to Karen Drive (STA ~0+00 to 11+50). This Phase can occur concurrent with either Phase A-1 or A-2, but before Phase A-4 and shall include:

1) Removal and replacement of existing RCP stormwater pipe and storm inlets affected.

Installation of the stormwater improvements may begin at such a time that it either does not or has the least impact to the projects critical path.

D. Phase A-4: Restoration (less final lift of asphalt) along Roberta Street from Barbara Drive to Karen Drive (STA ~0+00 to 11+50). This Phase shall include:

1) Landscape, sod, driveway, and any other restoration in ROW and on private property.

2) Roadway lime rock and first lift of asphalt placement (compacted, tested, and accepted).

3) Temporary striping and pavement markings.

4) Complete ROW to ROW final restoration (less final lift of asphalt).

The Contractor shall have 30 calendar days from the functional completion date of Phases A-1 through A-3 to complete Phase A-4 (less final lift of asphalt) from STA ~0+00 to 11+50. If the Contractor does not complete restoration (less final lift of asphalt) within 30 calendar days from the functional completion date of Phases A-1 through A-3, the Contractor will be issued a stop work notice on the rest of the streets until Phase A-4 is complete and accepted by the Owner, CEI, and EOR. A Phase completion notification letter will be provided to the Contractor by the City when the Owner, CEI, and EOR have deemed Phase A-4 (STA ~0+00 to 11+50) to be completely restored less final lift of asphalt.

2. Phases B – Lillian Street ~ STA 21+00 to 31+50:

A. Upon functional completion of Phase A-2, this phase may being.

B. Phase B-1: Sanitary sewer system improvements and private water service lines along Lillian Street from Barbara Drive to Karen Drive (STA ~21+00 to 31+50). This Phase shall include:

1) Installation of new sanitary sewer laterals and private wastewater service connection relocation. All existing manhole connections/service laterals to be abandoned and that are no receiving flow shall be plugged/grouted as required by the Contract Documents after all sewer services have been transferred. Abandoned service laterals from other phases that couldn't previously be grouted until this phase is out of service shall also be grouted.

Upon completion and before proceeding to the next phase, the Contractor shall request a Phase B-1 functional completion notification letter from the City, CEI, and EOR and Phase B-2 may begin.

C. Phase B-2: Water service installation along Lillian Street from Barbara Drive to Karen Drive (STA ~21+00 to 31+50). This Phase shall include:

1) All water services including private side water service relocation, meters, meter boxes, backflow preventers, valves, flushing, testing, and clearing of the proposed water system and associated appurtenances. All reclaim meters shall be relocated as shown on the plans as well.

2) Restoration of the work zone: trench backfilled and compacted to grade; temporary asphalt patching on all roadway crossings (including water service crossings); compacted lime rock on all driveway crossings (driveways are not to

be completely removed within the ROW as part of this Phase); mailbox removal/replacement; temporary roadway/crosswalk striping.

The water services shall be functionally complete (installed, backfilled, flushed, connected to new meter and backflow, cleared for use, and placed into service) and restoration as detailed above complete and accepted by issuance of a Phase B-2 functional completion notification by the Owner, CEI, and EOR before Phase B-3 and Phase C-1 may begin.

D. Phase B-3: Restoration (less final lift of asphalt) along Lillian Street from Barbara Drive to Karen Drive (STA ~21+00 to 31+50). This Phase shall include:

1) Landscape, sod, driveway, and any other restoration in ROW and on private property.

2) Roadway lime rock and first lift of asphalt placement (compacted, tested, and accepted).

3) Temporary striping and pavement markings.

4) Complete ROW to ROW final restoration (less final lift of asphalt).

The Contractor shall have 30 calendar days from the Phase B- 2 functional completion date to complete Phase B-3 (less final lift of asphalt) from STA ~21+00 to 31+50. If the Contractor does not complete restoration (less final lift of asphalt) within 30 calendar days from the functional completion date of Phase B-2, the Contractor will be notified to stop work on the rest of the streets until Phase B-3 is complete and accepted by the Owner, CEI, and EOR. A Phase completion notification letter will be provided to the Contractor by the City when the Owner, CEI, and EOR have deemed Phase B-3 (STA ~21+00 to 31+50) to be completely restored less final lift of asphalt.

3. Phase C – Venetian Parkway ~ Station 43+75 to 54+00:

A. Upon functional complete of Phase B-2, this phase may begin.

B. Phase C-1: Water system installation and private sanitary laterals along Venetian Parkway from Barbara Drive to Karen Drive (STA ~43+75 to 54+00). This Phase shall include:

1) Proposed water main, all water services including private side water service relocation, meters, meter boxes, backflow preventers, valves, fire hydrants, ARVs, sample points, flushing, testing, and Department of Health Clearance for the new water system and associated appurtenances.

Upon completion and before proceeding to the next phase, the Contractor shall request a Phase C-1 functional completion notification letter from the City, CEI, and EOR and Phase C-2 may begin.

C. Phase C-2: Sanitary sewer system improvements along Venetian Parkway from Barbara Drive to Karen Drive (STA ~43+75 to 54+00). This Phase shall include:

1) Connection to existing sanitary structures and installation of new sanitary sewer system including all manholes, gravity mains, sanitary sewer laterals, temporary and permanent connections to existing systems, modifications to existing/proposed systems, and connections of relocated private wastewater services. Sanitary sewer system shall be installed beginning at the deepest section working towards the shallowest sections (north to south from Karen Drive to Barbara Drive). All existing manhole connections/services to be abandoned and that are not receiving flow shall be plugged/grouted and sealed as required by the Contract Documents after all sewer services have been transferred. Abandoned service laterals from other phases that couldn't previously be grouted until this phase is out of service shall also be grouted.

2) Restoration of the work zone: trench backfilled and compacted to grade; compacted lime rock on all driveway crossings (driveways are not to be completely removed within the ROW as part of this Phase); valve pads; mailbox removal/replacement; sidewalk removal/replacement (temporary asphalt or final concrete is acceptable); temporary roadway/crosswalk striping.

3) Restoration of the work zone: ROW to ROW (less landscape/sod and roadway lime rock and asphalt placement). The entire ROW shall be compacted and graded as part of this Phase.

The gravity main shall be functionally complete (installed, backfilled, tested, cleared for use, and placed into service) and restoration as detailed above complete and accepted by issuance of a Phase C-2 functional completion notification by the Owner, CEI, and EOR before Phase C-3 and Phase D-1 may begin.

D. Phase C-3: Restoration (less final lift of asphalt) along Venetian Parkway from Barbara Drive to Karen Drive (STA ~43+75 to 54+00). This Phase shall include:

1) Landscape, sod, driveway, and any other restoration in ROW and on private property.
2) Roadway lime rock and first lift of asphalt placement (compacted, tested, and accepted).
3) Temporary striping and pavement markings.
4) Complete ROW to ROW final restoration (less final lift of asphalt).

The Contractor shall have 30 calendar days from the Phase C- 2 functional completion date to complete the Phase C-3 (less final lift of asphalt) of from STA ~43+75 to 54+00. If the Contractor does not complete restoration (less final lift of asphalt) within 30 calendar days from the functional completion date of Phase C-2, the Contractor will be issued a stop work notice on the rest of the streets until Phase C-3 is complete and accepted by the Owner, CEI, and EOR. A Phase completion notification letter will be provided to the Contractor by the City when the Owner, CEI, and EOR have deemed Phase C - 3 (STA ~43+75 to 54 +00) to be completely restored less final lift of asphalt.

4. Phase D – Hope Street ~ STA 61+00 to 71+50:

A. Upon functional completion of Phase C-2, this phase may being.

B. Phase D-1: Water system installation and private sanitary laterals along Hope Street from Barbara Drive to Karen Drive (STA ~61+00 to 71+50). This Phase shall include:

1) Proposed water main, all water services including private side water service relocation, meters, meter boxes, backflow preventers, valves, fire hydrants, ARVs, sample points, flushing, testing, and Department of Health Clearance for the new water system and associated appurtenances. All reclaim meters shall be relocated as shown on the plans as well.

Upon completion and before proceeding to the next phase, the Contractor shall request a Phase D-1 functional completion notification letter from the City, CEI, and EOR and Phase D-2 may begin.

C. Phase D-2: Sanitary sewer system improvements along Hope Street from Barbara Drive to Karen Drive (STA ~61+00 to 71+50). This Phase shall include:

1) Removal and replacement of sanitary sewer system, as shown on the plans, including all manholes, gravity mains, sanitary sewer laterals, temporary and permanent connections to existing systems, modifications to existing/proposed systems, and connections of relocated private wastewater services. Sanitary sewer system shall be installed beginning at the deepest section working towards the shallowest sections (north to south from Karen Drive to Barbara Drive). All existing manhole connections/services to be abandoned and that are no receiving flow shall be plugged/grouted as required by the Contract Documents after all sewer services have been transferred. Abandoned service laterals from other phases that couldn't previously be grouted until this phase is out of service shall also be grouted.

2) Restoration of the work zone: trench backfilled and compacted to grade; compacted lime rock on all driveway crossings (driveways are not to be completely removed within the ROW as part of this Phase); valve pads; mailbox removal/replacement; temporary roadway/crosswalk striping.

3) Restoration of the work zone: ROW to ROW (less landscape/sod and roadway lime rock and asphalt placement). The entire ROW shall be compacted and graded as part of this Phase.

All the proposed sanitary system within Phase D-2 shall be functionally complete (installed, backfilled, tested, cleared for use, and placed into service) and restored as detailed above complete and accepted by issuance of a Phase D-2 functional completion notification by the Owner, CEI, and EOR before Phase D-3 and Phase E-1 may begin.

D. Phase D-3: Restoration (less final lift of asphalt) along Hope Street from Barbara Drive to Karen Drive (STA ~61+00 to 71+50). This Phase shall include:

1) Landscape, sod, driveway, and any other restoration in ROW and on private property.

2) Roadway lime rock and first lift of asphalt placement (compacted, tested, and accepted).

3) Temporary striping and pavement markings.

4) Complete ROW to ROW final restoration (less final lift of asphalt).

The Contractor shall have 30 calendar days from the Phase D-2 functional completion date to complete Phase D-3 (less final lift of asphalt) from STA ~61+00 to 71+50. If the Contractor does not complete restoration (less final lift of asphalt) within 30 calendar days from the functional completion date of Phase D-2, the Contractor will be issued a stop work notice on the rest of the streets until Phase D-3 is complete and accepted by the Owner, CEI, and EOR. A Phase completion notification letter will be provided to the Contractor by the City when the Owner, CEI, and EOR have deemed Phase D-3 (STA ~61+00 to 71+50) to be completely restored less final lift of asphalt.

5. Phase E – Elaine Street ~ Station 82+40 to 94+00:

A. Upon functional completion of Phase D-2, this phase may begin.

B. Phase E-1: Sanitary and private water service lines along Elaine Street from Barbara Drive to Karen Drive (STA ~82+40 to 94+00). This Phase shall include:

1) Connection to existing sanitary structures and installation of new sanitary sewer system including all manholes, gravity mains, sanitary sewer laterals, temporary and permanent connections to existing systems, modifications to existing/proposed systems, and connections of relocated private wastewater services. Sanitary sewer system shall be installed beginning at the deepest section working towards the shallowest sections (east to west from Karen Drive to Barbara Drive). All existing manhole/service connections to be abandoned and that are no receiving flow shall be plugged/grouted as required by the Contract Documents after all sewer services have been transferred. Abandoned service laterals from other phases that couldn't previously be grouted until this phase is out of service shall also be grouted.

Upon completion and before proceeding to the next phase, the Contractor shall request a Phase E-1 functional completion notification letter from the City, CEI, and EOR and Phase E-2 may begin.

C. Phase E-2: Water service installation along Elaine Street from Barbara Drive to Karen Drive (STA ~82+40 to 94+00). This Phase shall include:

1) All water services including private side water service relocation, meters, meter boxes, backflow preventers, valves, flushing, testing, and clearing of the proposed water system and associated appurtenances.

2) Restoration of the work zone: trench backfilled and compacted to grade; compacted lime rock on all driveway crossings (driveways are not to be completely removed within the ROW as part of this Phase); mailbox removal/replacement; temporary roadway/crosswalk striping.

3) Restoration of the work zone: ROW to ROW (less landscape/sod and roadway lime rock and asphalt placement). The entire ROW shall be compacted and graded as part of this Phase.

The water services shall be functionally complete (installed, backfilled, flushed, connected to new meter and backflow, cleared for use, and placed into service) and restoration as detailed above complete and accepted by issuance of a Phase E-2 functional completion notification by the Owner, CEI, and EOR before Phase E-4 and Phase F may begin.

D. Phase E-3: Stormwater improvements along Elaine Street from Barbara Drive to Karen Drive (STA ~82+40 to 94+00). This Phase can occur concurrent with either Phase E-1 or E-2, but before Phase E-4 and shall include:

1) Removal and replacement of existing RCP stormwater pipe and storm inlets affected as part of the sewer system installation, including a length of stormwater drainage along Barbara Drive.

Installation of the stormwater improvements may begin at such time that it either does not or has the least impact to the projects critical path.

E. Phase D-4: Restoration (less final lift of asphalt) along Elaine Street from Barbara Drive to Karen Drive (STA ~82+40 to 94+00). This Phase shall include:

1) Landscape, sod, driveway, and any other restoration in ROW and on private property.

2) Roadway lime rock and first lift of asphalt placement (compacted, tested, and accepted).

3) Temporary striping and pavement markings.

4) Complete ROW to ROW final restoration (less final lift of asphalt).

The Contractor shall have 30 calendar days from the functional completion date of Phases D-1 through D-3 to complete Phase D-4 (less final lift of asphalt) of from STA ~82+40 to 94+00. If the Contractor does not complete restoration (less final lift of asphalt) within 30 calendar days from the functional completion date of Phases D-1 through D-3, the Contractor will be issued a stop work notice on the rest of the project until Phase D-4 is complete and accepted by the Owner, CEI, and EOR. A Phase completion notification letter will be provided to the Contractor by the City when the Owner, CEI, and EOR have deemed Phase D - 4 (STA ~82+40 to 94 +00) to be completely restored less final lift of asphalt.

6. Phases F – Abandonment of Existing Utilities ~ STA 0+00 to 94+00 (Project Limits)

A. Phase F: Cutting, capping and grouting of existing utilities to be abandoned throughout the project area (includes all project streets and Phases). This Phase shall include:

1) Cutting and plugging existing valves and removing existing valve boxes.

2) Cutting, plugging and grouting of existing water mains to be abandoned.

3) Plug and seal all outstanding abandoned connections from existing sanitary sewer manholes.

4) Removal of lid and grouting of existing manhole structures to be abandoned.

5) Cutting, plugging and grouting of existing sanitary sewer mains to be abandoned.

Cutting, capping and grouting of existing utilities (throughout the project area) shall not be performed until all the utility improvements and restoration are complete and accepted by the Owner, CEI, and EOR.

7. Phase G – Final Lift of Asphalt ~ STA 0+00 to 94+00 (Project Limits)

A. Phase G: Final Lift of Asphalt along Venetian Parkway, Roberta Street, Lillian Street, Elaine Street, Hope Street, Barbara Drive and Karen Drive, including temporary and final (thermoplastic) striping. The final asphalt lift on all streets shall not be placed until all the utility improvements and restoration are complete and accepted by the Owner, CEI, and EOR.

8. Phase H – Additional Paving ~ Plan Sheet P 001

A. Phase H: Mill and pave those sections shown in red on Plan Sheet P 001. Contractor shall provide a paving schedule, for review and acceptance by the EOR and Owner, to complete the additional asphalt paving concurrent with paving of other streets in order to limit road closures.

9. Special Requirements

A. Construction activities from mobilization to demobilization, including final restoration, must be completed within 575 calendar days from the issued Notice to Proceed. The resulting contract will commence on issuance of a notice to proceed (NTP) and be in effect until completion of the project.

B. All construction work done on private property shall be done as quickly as feasible to avoid disruption to residents. Restoration of private property (backfilling, compaction, grading and sod installation) shall be done immediately after the new utility has been installed on private property. A private property, with exception for open holes for plumbing inspections, cannot remain unrestored after water and/or wastewater services have been relocated for more than 3 calendar days.

C. All driveways shall be restored to their previous condition or better, according to City of Venice Standards. Gravel, dirt, and concrete driveways shall be replaced with reinforced concrete to the edge of the right-of-way and asphalt driveways shall be replaced with asphalt to the edge of the right-of-way, unless otherwise specified on the plans. Concrete driveways shall have a thickened apron and reinforcements on the apron as shown in the plans to prevent cracking. Existing brick pavers shall be placed on pallets, wrapped, and stored onsite to prevent damage. If additional brick pavers are required for restoration, the Contractor shall coordinate with the property owner, City, and CEI to ensure an acceptable matching brick paver is ordered by the Contractor.

D. During construction, the Contractor shall keep one lane of traffic open at all times on all affected roads. Flagmen shall be utilized to assist traffic through the construction zone when two lanes of travel are not provided. Flaggers shall possess a Temporary Traffic Control (TTC) Basic Flagger Certificate per requirements set forth by the Florida Department of Transportation. Access onto existing streets and drives shall be maintained to local traffic, emergency vehicles, delivery vehicles, postal vehicles, public transportation, solid waste and recycling vehicles, and property owners. At all times, access must be provided to existing fire hydrants, valves, manholes, and cleanouts.

E. Notification of road closures must be provided in writing to the City of Venice Police Department, local Fire Department, and local Emergency Medical Service (EMS) least 72 hours in advance of the road closures. Access to each residence and business shall be maintained for emergency vehicles at all times. At no time may a roadway be blocked at two locations within on block. Contractor must provide a road closure plan and schedule for review by the City, EOR, and CEI at least ten (10) work days prior to all proposed road closures.

F. The Contractor shall notify City of Venice Utilities Department at least ten (10) work days in advance of all planed service interruptions, driveway cuts, or open-cutting a roadway and receive City Project Manager's approval before proceeding with planned interruptions.

G. Contractor shall assume all existing mains are unrestrained at the connection points and will agree to restrain the mains in accordance with the City of Venice Utilities-Standard Details, General Notes, and Testing Requirements. No additional payment will be made for restraining existing pipelines.

H. All piping shall be installed with a #12 AWG locating tone wire. Prior to final acceptance and payment, the Contractor shall verify that all piping has at least one detectable tone locating wire with the City's Resident City Inspector or other City Representative. All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, engineer/CEI and utility owner as applicable, prior to acceptance of ownership. This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project. Continuity testing in lieu of actual line tracing shall not be accepted. All locating tone wire splices shall be made water tight.

I. Contractor's site superintendent(s) must attend all meeting relating to the project, including, but not limited to: progress meetings, neighborhood information meetings, on-site meetings, and any other meeting deemed necessary by the City of Venice.

J. All City of City of Venice Utilities- Standard Details, General Notes, and Testing Requirements are applicable to this project and are made part of the Contract Documents by reference to current City of Venice Utilities- Standard Details, General Notes, and Testing Requirements, can be requested trough the following web address:

https://www.venicegov.com/services/utilities/standard-details

K. In the event of a conflict between the City Utility Standards and these specifications and drawings, the more stringent requirement shall apply or better-quality product provided.

L. Contractor shall be responsible for all costs associated with installing and testing of all compact fill materials and road base and sub-base to avoid future settlement. At a minimum, backfill and compaction shall be per detail U-1 (Utility Pipe Trench Detail on Sheet C 501). Perform compaction density tests at all such backfill areas with spacing not to exceed 100 feet apart and on each compacted layer for paved areas.

M. For unpaved areas, compaction shall take place a minimum of every 500 feet, or a minimum of one test per every section of pipe laid. Compaction testing density shall be per AASHTO T-180.

N. Contractor shall be responsible for all inspection and testing unless otherwise specified. For tests to be made by the Contractor, the testing personnel shall make the necessary inspections, furnish all material and equipment to properly perform the testing, and furnish all results to City of Venice for acceptance of all equipment and installation as required.

O. Contractor shall be responsible for the cost of all testing as required.

P. New water main and service piping (from main to curb stop at meter) shall be constructed, certified as-built drawings provided, pressure tested, flushed (full bore), and bacteriologically cleared for FDEP clearance.

Q. Contractor to pre-test all pressure piping and meet AWWA C600-17 (or current edition) allowable loss standards for a minimum of one hour before commencing the pressure test.

R. Fire hydrants shall have a safety flange or breakaway flange at the ground line as stipulated in Section 3.1 General Design of ANSI/AWWA C-502 latest revision, and shall be set so that the center of the safety breakaway flange is located a minimum of 2 inches and a maximum of 8 inches above finished sidewalk or finish grade.

S. The Contractor shall provide for review by the Owner and Engineer a detailed sequence of construction that identifies how new gravity sewer and service laterals will

be installed, as well as system testing, while keeping the existing system in service.

T. Clearing and grubbing shall be limited to work areas only. Contractor shall be responsible for restoring all areas disturbed by his work. All disturbed areas shall be restored to pre- construction conditions. Contractor shall be required to water vegetation replaced until established/rooted.

U. Trees and shrubs within the work area shall be removed as directed by the City of Venice and/or the property owner. Irrigation damaged or temporarily removed during construction shall be fully restored.

V. All fences damaged/removed shall be restored to their original conditions.

W. In accordance with the City of Venice requirements, pre-construction video(s) (dry and wet conditions) shall be taken with copies provided to the County and Engineer. Contractor shall supplement these videos with still photographs (in addition to the pictures required in the Pre-Construction Assessment Forms) as necessary to reflect existing conditions. This shall include but not be limited to sod type, driveways and driveway culvert. A pre-construction video shall be provided for each Phase, and each Phase's video shall not be made more than the number of days prior to construction as specified in Specification Section 01850 - Color Audio-Video Preconstruction Record, Paragraph 2.01.A.

X. Contractor shall be responsible for all construction layout and preparation of Record Drawings in accordance with City requirements. This shall include but not be limited to water main, valves, fire hydrants and services, gravity sewer main and laterals, stormwater drainage, and approved changes.

Contractor shall field verify the location (horizontal and vertical), size, and material of all utilities (public and private) within the limits of the project and all utility mains which connections are to be made (including existing sanitary sewer laterals and water services). Contractor shall conduct pot-holing of all areas a minimum of one (1) week prior to any work in an area. This shall be reviewed with the City and Engineer to allow adjustment of mains as required to minimize conflicts. If the conditions encountered in the field differ from what is shown on the plans the Contractor shall submit to the City cost proposal for completing the work prior to purchasing parts/materials or commencing the work.

Y. Contractor shall field verify with a surveyor proposed and existing invert elevations at conflict crossings before and after installation of new utilities. Field verification shall be done to comply with the minimum survey requirements (level checking grade rod / survey laser level)

Z. Contractor shall contact all utility suppliers as listed on Sheet C 001 of the plans, as well as those who may have been omitted, but are reported through Sunshine 811. Contractor shall coordinate with these utilities for protection and adjustment of their facilities as needed. All costs shall be included in individual bid items.

AA. Contractor shall be responsible for all Maintenance of Traffic for the project. Maintenance of Traffic shall be in accordance with the FDOT Standard Index and the Manual of Uniform Traffic Control Devices (MUTCD, Part VI). Existing traffic conditions may warrant night work. If night work is required, the Contractor will be responsible for proper MOT at no additional cost.

BB. The Contractor shall be responsible for obtaining equipment and material storage areas and all necessary permits, ROW, and temporary construction access. Where private storage areas are utilized, the Contractor shall provide a copy of the Agreement to the City.

CC. The Contractor shall be responsible for maintaining all work areas in a safe and clean manner as identified in the City of Venice Utilities- Standard Details, General Notes, and Testing Requirements. This shall include but not be limited to daily watering of bare soil roadways and sweeping of roadway and sidewalk surfaces.

DD. All excavation shall be unclassified with no additional payment to be made for rock, unsuitable material, or dewatering (except for dewatering associated with piping and pumping under Vanderbilt Drive). The Contractor shall be responsible for making his own site observations and exploration to determine site conditions prior to bidding.

EE. The Contractor shall prepare and provide for review by the Owner and Engineer a MOT Plan, Tropical Storms and Hurricanes Plan, Sewer Bypass Plan, and Safety Program/Risk Management Program.

FF. The Contractor shall hire a third-party independent consultant who specializes in vibration monitoring to be responsible for providing, monitoring, locating/relocating equipment, calibrating, and maintaining all vibration monitoring equipment. The monitoring company shall monitor vibrations during construction activities to ensure that peak particle velocity as measured by a geophone, seismograph, or other appropriate device does not exceed 0.5 inches per second as measured at the right-of-way line. Vibration monitoring equipment shall be placed in a location that accurately measures construction activities for the block undergoing construction activities. If at any time the peak particle velocity exceeds 0.5 inches per second then the contractor shall modify his construction operations as necessary, including but not limited to using static compaction methods in lieu of vibratory rollers. The Owner and Engineer shall receive copies of all vibration monitoring test results. Vibratory monitoring reports shall be signed and sealed by a registered Florida Professional Engineer.

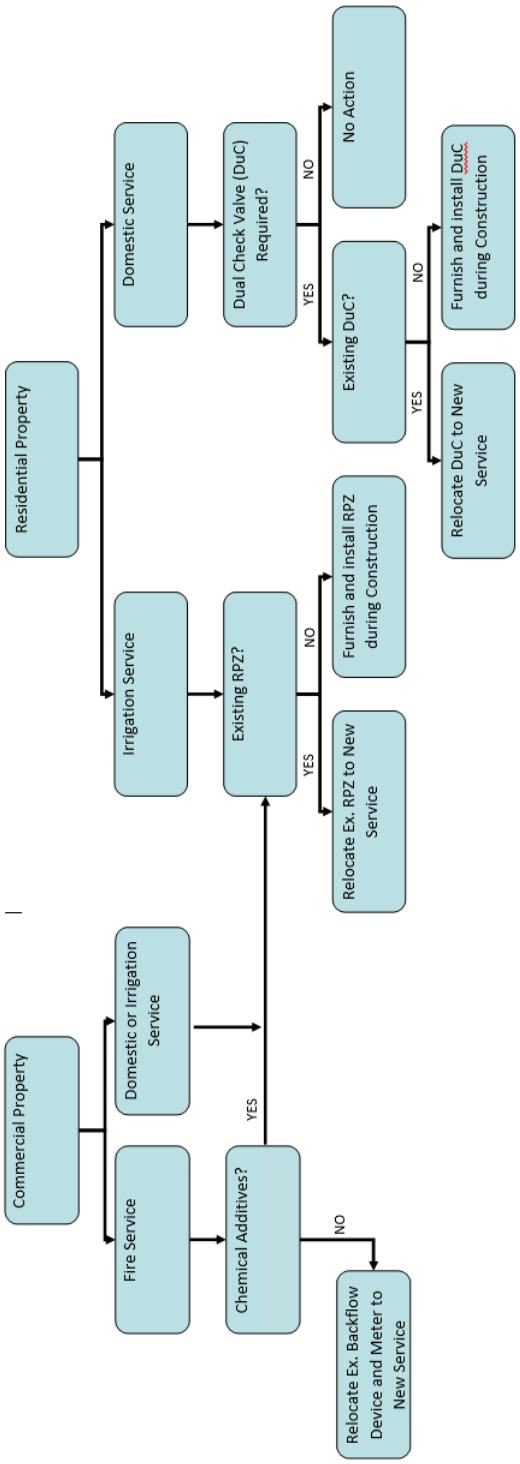
The Contractor shall submit for each property a Pre-Construction Assessment Form prior to commencement for the phase of work during which the property will be impacted. The Pre-Construction Assessment Form is included in Section IX of this document. An editable electronic version of the form will be provided to the Contractor. Each form shall be prepared electronically and submitted as an un-editable PDF to the City. The file name shall reflect the property address in the following format: Street Name_Property Number (i.e. Hope Street_1076.PDF) Duplexes and properties with multiple addresses per legal parcel shall be submitted as separate sheets in the following format: Street Name_ Legal Property Number_

Type of residence (duplex, apartment, etc.)_Street Number on building (i.e. Hope Street_1076_Duplex_1076A.PDF).

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

See Next Page for the City's Backflow Prevention Requirements



END OF SECTION

SECTION 01050

FIELD ENGINEERING AND SURVEY

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall provide and pay for field engineering and survey service required. Such work shall include survey work to establish existing and/or proposed lines and grades and to locate and lay out site boundary's, project control, site improvements, structures, controlling lines and levels and all other survey required for the construction of the work. Also included are such engineering services as are specified or required to execute the Contractor's construction methods. Engineers and surveyors shall be licensed professionals registered in the State ofFlorida.

B. The accuracyof anymethod of staking shall be the responsibilityof the Contractor. All surveying for vertical and horizontal control shall be the responsibility of the Contractor.

C. The Contractor shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks, lines and elevations as may be necessary for the prosecution of the work.

1.2 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the project are those designated on the Drawings. The Contractor shall locate and protect control points prior to starting site work and shall preserve all permanent reference points during construction. In working near anypermanent property corners or reference markers, the Contractor shall use care not to remove or disturb any such markers. In the event that markers must be removed or are disturbed due to the proximityof construction work, the Contractor shall have them referenced and reset by a Florida Registered Land Surveyor and Mapper.

1.3 PROJECT SURVEY REQUIREMENTS

A. The Contractor shall engage the services of a Florida Registered Land Surveyor and Mapper to establish all lines and grades on the Drawings necessary to fully construct the work in accordance with Chapters 5J-17.050, 5J-17.051, and 5J-17.052 of the Florida Administrative Code.

B. The Registered Land Surveyor and Mapper shall establish and stake all Right-

of-Way adjacent to construction of new mains at 100' intervals on tangents, 50' intervals on curves and at all changes in direction. The surveyor shall place lath and hub at such points with stations indicated. Tack in hub shall not be permitted.

1. The Registered Land Surveyor shall utilize current right-of-way maps, plats and property deeds, all being of public record, in conjunction with existing monumentation to establish the existing right-of-way lines and utility easement boundaries.

C. The Registered Land Surveyor shall establish a temporary benchmark system in accordance with Chapter 5J-17 F.A.C. and shall provide a written list to the Contractor for his use.

D. The Contractor shall provide an As-Built Survey of all pipelines installed in the project, signed and sealed by a Florida Registered Surveyor and Mapper. As a minimum, the As-Built Survey shall provide at minimum:

1. Top of pipe elevations at every 100 feet for open cut and no greater than 25 feet for HDD(provide bore profile);
2. Top of pipe elevations at any grade change or direction changes;
3. Top of pipe and top elevations of all utilities at utility crossings where the proposed utility crosses above or below other utilities;
4. At locations where a top-of-pipe elevation is required for pipeline, a top-of-ground or top-of pavement elevation shall also be measured and noted on thedrawings.
5. Top elevations and GPS coordinates of all fittings, valves (top of nut and center of lid), and hydrants (center of 5" Storz);
6. Three (3) swing ties from permanent features to the center of each valve box;
7. GPS coordinates of all ARV enclosures, hydrants and above-grade appurtenances;
8. GPS coordinates of all service saddles and meters (center of meter or meterbox);
9. All other surveying as required to show that the work has been completed to the lines and grades shown on the Drawings or the Specifications.

E. The Contractor shall provide electronic GIS data at the end of the project that will be in AutoCAD Civil 3D 2010 or later with attributes or the ESRI Geodatabase format, version 10.x or higher. Data shall be projected in State Plane Florida West HARN, NAD1983 datum, linear units in feet. All valves, hydrants, fittings, blow-offs, air release valves, service connections, meter boxes, along with the top of the new water mains at 100 foot intervals, shall be GPS located to sub-foot (survey) accuracy by the Contractor and provided to the Engineer. Coordinate data shall be field collected with autonomous GPS readings and subsequently differentially corrected via real time corrections. Additional documentation data collected and provided in the database shall include:

1. Pipe: Facility ID number, diameter, material, manufacturer;
2. Fittings: Facility ID number, type (i.e. tee, 90° bend, etc.) diameter, material, manufacturer;
3. Valves: Facility ID number, diameter, type, manufacturer, function, swing tie 1, swing tie 2, swing tie 3, turns to close;
4. Hydrants: Facility ID number, manufacturer;
5. Services Saddles: Facility ID number; size, manufacturer.

F. GPS coordinates shall be survey accuracy and shall conform to the requirements of Chapter 5J-17-6, FAC, pursuant to Chapter 472.

1.4 RECORDS

A. Maintain a complete, accurate log of all control and survey work as construction progresses. Survey notes indicating the information and measurements used in establishing locations and grades shall be kept in notebooks and furnished to the Engineer with the Record Drawings.

1.5 SUBMITTALS

A. Submit name and address of surveyor to the Engineer.

B. Submit attributes to Engineer in advance of data collection.

C. On request of the Engineer, submit documentation to verify accuracy of field engineering work.

D. Submit three (3) full sized 24”x36” of the as-built survey, signed and seal by the Registered Land Surveyor.

E. Submit two (2) CDS of the as-built survey in AUTOCAD 2010 or later format.

F. Submit two (2) CDS of the GIS data.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

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SECTION 01090

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Abbreviations and acronyms used in Contract Documents to identify reference standards.

1.2 QUALITY ASSURANCE

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricterstandards.

B. Publication Date: The publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

1.3 ABBREVIATIONS, NAMES, AND ADDRESSES OFORGANIZATIONS

Obtain copies of referenced standards direct from publication source, when needed for proper performance of Work, or when required for submittal by Contract Documents.

AA	Aluminum Association 818 Connecticut Avenue, NW Washington, DC 20006
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, Washington, DC 20001
ACI	American Concrete Institute Box 19150 Redford Station Detroit, MI 48219
AI	Asphalt Institute Building College Park, MO 20740

AISC	American Institute of Steel Construction 1221 Avenue of the Americas New York, NY 10020
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASTM	American Society for Testingand Materials 1916 Race Street Philadelphia, PA 19103
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235
AWS	American Welding Society 2501 NW 7th Street Miami, FL 33125
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite 2110 Chicago, IL 60601
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
NEMA	National Electrical Manufacturers' Association 2101 L Street, N.W. Washington, DC 20037
NSF	National Sanitation Foundation P.O. Box 130140 789 N. Dixboro Road Ann Arbor, MI 48113-0140

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 20076
PCI	Prestressed Concrete Institute 20 North Wacker Drive Chicago, IL 60606
PPI	Plastics Pipe Institute 105 Decker Court, Suite 825 Irving TX, 75062
SSPC	Steel Structures Painting Council Pittsburgh, PA
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The Contractor shall receive and accept the compensation provided in the Proposal and the Contract as full payment for furnishing all materials, labor, tools and equipment, for performing all operations necessary to complete the work under the Contract, and also in full payment for all loss or damages arising from the nature of the work, or from the action of the elements or from any unforeseen difficulties which may be encountered during the execution of the work until the final acceptance by the Owner.

B. The prices stated in the Proposal include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the Drawings and as specified herein. The basis of payment for an item at the price shown in the Proposal shall be in accordance with the description of that item in this Section.

C. Should the Contractor feel that the cost for any item of work has not been established by the Bid Form or payment items, he shall include the cost for that work in some other applicable bid item, so that his Proposal for the project does reflect his total price for completing the work as shown on the drawings.

1.2 MEASUREMENT

A. The quantities for payment under lump sum items in this Contract will be in accordance with the Contractor's bid price and detailed bid item breakdown as a percentage of work complete as determined by actual measurement. A representative of the Contractor shall witness all field measurements and agree to all measurements with owner's representative prior to submitting their application for payment.

B. The quantities for payment under unit price items in this Contract will be determined by actual measurement of the completed items in place or performed, ready for service and accepted by the Owner.

C. Retainage of 10 percent of each progress payment made to the contractor shall be withheld until final completion and acceptance of the project by the City of Venice for all construction services contracts.

1.3 PAYMENT

A. Payment for the various items of the Bid Form, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of WORK being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the CONTRACT DOCUMENTS, including all appurtenances thereto, and including all costs of compliance with the regulations of public agencies having jurisdiction; including Safety and Health Requirements of the Florida Division of Industrial Safety and the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).

B. Final payment for WORK governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Architect/ENGINEER multiplied by the unit sum/price for WORK which is incorporated in or made necessary by the WORK.

1.4 PAYMENT ITEMS

Bid Item No. 1 – Maintenance of Traffic and Traffic Control: Payment shall be made at the Contract Lump Sum Price as designated on the Price Schedule of the Bid Form for maintenance of traffic including preparing a maintenance of traffic plan; obtaining construction permits and approvals; construction, maintenance, and removal of approved temporary detour facilities; providing of personnel and facilities to guide traffic safely around the work; providing access to residences and businesses along the project; furnishing, installing, and maintaining of traffic control barricades, railings, warning lights, and all other safety devices during construction; the immediate clean-up of any spills; and any other special requirements needed for the safe and expeditious movements of traffic as defined in the Technical Specifications, and approved by City of Venice. Payment will be a percentage of the lump sum amount equal to the percent value of work completed of the overall project.

Bid Item No. 2 – Mobilization and Demobilization: Payment will be made at the Contract lump sum price for the contractor's cost for mobilization, demolition, survey, performance bonds, insurance, audio-video tape of existing conditions, completed driveway assessment forms with photographs, preparing a field office, identifying and securing a staging area and other applicable administrative charges as outlined in the Contract Documents and specified herein. Payment for mobilization will be 50% of the lump sum amount to be included with the first or subsequent payment request. The Contractor will be eligible to invoice for the next 25% of the lump sum amount for this item after 50% of the valve of work has been completed, invoiced, and paid for by the City. Payment for Demobilization will be 25% of the lump sum amount to be included with the final payment request.

Bid Item No. 3 – 8" PVC Gravity Sanitary Sewer Pipe: The Contractor shall provide all labor, equipment, and materials to furnish and install the PVC pipe. The furnish and installation of the PVC pipe shall include, but is not limited to: connections to existing systems and manholes; excavating the trench; dewatering, temporary shoring and bracing cleaning dirt and foreign material from within pipe and bell; beveling field-cut joints and pipe shorts; furnishing and installing all required fittings as designated on the plans or as designated in the field by the Engineer and the City of Venice; all necessary erosion control measures, including installation and removal; all necessary restoration including but not limited to backfill, compaction, sod, landscaping, mailboxes, restoring the roadway/right-of-way, installing temporary asphalt in conformance with these contract documents, and maintaining all temporary asphalt until it is milled and resurfaced; cleaning up and removing excess gravity sewer pipe and appurtenances; pressure testing the gravity sewer, including installation and/or removal of all materials and equipment, temporary or otherwise necessary to complete this activity; including installation and/or removal of all materials and equipment, temporary or otherwise necessary to complete this activity.

The cost for hydrostatic or air testing the PVC sewer mains shall be included in the pipeline construction unit prices, but may not be limited to, furnishing and installing all of the following: material, labor, gages, temporary valves, and temporary plugs.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment shall be made based on the horizontal distance in feet of PVC main along the top centerline of the pipe, from the center of manhole to center of manhole, in place complete and acceptable to the City of Venice.

Bid Item No. 4 – Remove Existing 8" PVC Gravity Sewer Pipe: The Contractor shall provide all labor, equipment and materials to remove the out of service sewer pipeline and appurtenances (such as casing, fittings, and other materials) as designated on the plans or directed by the City of Venice. Only where the existing sewer is designated on the drawings to be replaced, the Contractor shall removal of the out of service pipe shall include, but may not be limited to: removing the out of service pipeline and appurtenances; furnishing and installing plug or cap to in-service open-ended pipe; contractor shall properly/legally dispose of removed materials at his expense; cutting of any existing pipe to accommodate removal; backfilling and compacting the trench including regrading the terrain; all necessary erosion control measures, including installation and removal; cleaning up; removing all concrete vaults as required; providing temporary sewer bypass by pumping or trucking, backfilling, and compacting trench and disturbed areas.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for gravity sewer pipe removed will be based on the actual horizontal distance in feet of pipe removed.

Bid Item No. 5 - Sanitary Sewer Lateral (ROW to New Gravity Sewer Main): Measurement for sanitary sewer laterals shall include full compensation for the labor, equipment and materials necessary to furnish and install the lateral from the right of way to the new gravity sewer main. The installation of each lateral shall include but is not limited to all excavation, asphalt removal, curb removal, sidewalk removal, pipe, wyes, connection to the gravity sewer, cleanouts, fittings, saddles, taps, excavation, flowable fill, tracing wire, backfill, compaction, roadway restoration, temporary asphalt, maintaining all temporary asphalt until it is milled and resurfaced, sod replacement, casings, etc.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for sanitary sewer laterals from the ROW to the new gravity sewer main will be determined by the actual number of linear feet of service lateral installed complete, working, and accepted.

Bid Item No. 6 - Sanitary Sewer Service Lateral (ROW to Existing Gravity Sewer Main): Measurement for sanitary sewer laterals shall include full compensation for the labor, equipment and materials necessary to furnishing and install the lateral the right of way to an existing gravity sewer. The installation of each lateral shall include but is not limited to all excavation, asphalt removal, curb removal, sidewalk removal, pipe, wyes, connection to the gravity sewer, cleanouts, fittings, saddles, taps, excavation, flowable fill, tracing wire, backfill, compaction, roadway restoration, temporary asphalt, maintaining all temporary asphalt, sod replacement, casings, irrigation, landscaping, low voltage wiring and lighting, etc.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for sanitary sewer laterals from the ROW to the existing gravity sewer main will be determined by the actual number of linear feet of service lateral installed complete, working, and accepted.

Bid Item No. 7 - Sanitary Sewer Service Lateral (Private Property): Measurement for sanitary sewer laterals shall include full compensation for the labor, equipment and materials necessary to furnishing and install the lateral from the right of way to an existing sanitary sewer connection on private property. The installation of each lateral shall include but is not limited to all home sewer service exploration, excavation, pipe, cleanouts, fittings, backfill, compaction, reconnection to the existing service connection at the home at one or more locations as shown on the plans, irrigation, landscaping, low voltage wiring and lighting, etc.

Payment for sanitary sewer service laterals in private property will be determined by the actual number of horizontal linear feet of service lateral installed complete from ROW to house connection point, working, and accepted. Restoration of private property is not included in this bid item.

Bid Item No. 8 – Sanitary Sewer Manhole: The unit price for manholes shall include, but is not limited to, all costs for labor, equipment, and materials for excavation; framing; dewatering, setting structure, connecting sewers, maintenance of flow, cover, backfilling, compaction, etc.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for new sanitary sewer manholes will be determined by the actual count of each manhole installed and accepted.

Bid Item No. 9 – Sanitary Sewer Manhole - Doghouse: The unit price for doghouse manholes shall include, but is not limited to: all costs for labor, equipment, and materials for excavation, framing, dewatering, setting structure, connecting sewers, maintenance of flow, cover, backfilling, compaction, poured in place concrete, creating manhole bench and channel, cutting out existing sewer mains, and all necessary erosion control measures, including installation and removal.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for new sanitary sewer doghouse manholes will be determined by the actual count of each doghouse manhole installed and accepted.

Bid Item No. 10 – Remove Existing Sanitary Sewer Manhole: The unit price to remove each manhole shall include, but is not limited to: excavation, removal, including but not limited to the top section/cone, filling with stone, placing filter fabric, and backfilling, maintenance of flow, disposal, sodding, restoration and capping/plugging existing sewer main; all necessary erosion control measures, including installation and removal.

Payment for existing sanitary sewer manholes removed will be determined by the actual count of each manholes removed and accepted.

Bid Item No. 11 – Core Existing Sanitary Manhole: The Contractor shall provide all labor, materials, and equipment for the coring of sanitary manholes. Manhole coring work includes, but may not be limited to, excavation; backfilling and compacting; restoration; cutting or coring of existing manhole; reshaping manhole bench and channel for new connection; maintenance of flow; removal and disposal of waste material.

Payment shall be made for each sanitary manhole core made by the contractor.

Bid Item No. 12 – Place 8" Pipe Out of Service: The unit price for placing pipe out of service shall include all costs for furnishing, handling, and placing all grout material into the pipe and manhole, providing caps or plugs and thrust blocks to prevent grout intrusion into "in-service" pipe, removal and disposal of remaining existing sewer materials in the system, removal of all manhole covers and frames, and restoration of areas disturbed to perform this bid item. Placing all pipes and manholes out of service shall be measured length in linear feet through existing valves, fittings, and manholes. The grout material shall be flowable-fill and will fill all voids within the abandoned pipes and manholes. Contractor shall provide venting as necessary to assure that there are no air gaps in the pipe causing voids to form in grout injected into pipe

Payment for placing pipes out of service will be determined by the actual horizontal distance in linear feet of pipe grout filled.

Bid Item No. 13 – Place 6" Pipe Out of Service: The unit price for placing pipe out of service shall include all costs for furnishing, handling, and placing all grout material into the pipe and manhole, providing caps or plugs and thrust blocks to prevent grout intrusion into "in-service" pipe, removal and disposal of remaining existing sewer materials in the system, removal of all manhole covers and frames, and restoration of areas disturbed to perform this bid item. Placing all pipes and manholes out of service shall be measured length in linear feet through existing valves, fittings, and manholes. The grout material shall be flowable-fill and will fill all voids within the abandoned pipes and manholes. Contractor shall provide venting as necessary to assure that there are no air gaps in the pipe causing voids to form in grout injected into pipe

Payment for placing pipes out of service will be determined by the actual horizontal distance in linear feet of pipe grout filled.

Bid Item No. 14 – Place 4" Pipe Out of Service: The unit price for placing pipe out of service shall include all costs for furnishing, handling, and placing all grout material into the pipe and manhole, providing caps or plugs and thrust blocks to prevent grout intrusion into "in-service" pipe, removal and disposal of remaining existing sewer materials in the system, removal of all manhole covers and frames, and restoration of areas disturbed to perform this bid item. Placing all pipes and manholes out of service shall be measured length in linear feet through existing valves, fittings, and manholes. The grout material shall be flowable-fill and will fill all voids within the abandoned pipes and manholes. Contractor shall provide venting as necessary to assure that there are no air gaps in the pipe causing voids to form in grout injected into pipe

Payment for placing pipes out of service will be determined by the actual horizontal distance in linear feet of pipe grout filled.

Bid Item No. 15 – Place Existing Sanitary Service Lateral Out of Service: The contractor shall provide all labor, equipment and materials to cut, plug, and grout fill sewer laterals that are placed out of service. Placing sewer laterals out of service includes, but may not be limited to, all costs for furnishing, handling, and placing all grout material into the pipe and manhole; providing caps or plugs adequate to prevent grout intrusion; removal and disposal of remaining existing sewer materials in the system; restoration of areas disturbed to perform this bid item; any other materials, labor, and equipment needed to place the lateral out of service. The grout material shall be flowable-fill and will fill all voids within the abandoned pipes. Contractor shall provide venting as necessary to assure that there are no air gaps in the pipe causing voids to form in grout injected into pipe.

Payment for placing sanitary sewer services laterals out of service will be determined by each lateral that is removed from service.

Bid Items No. 16 – Private Property Restoration - Sod: The Contractor shall provide all labor, equipment, and certain materials to restore sod that have been damaged due to the installation of sanitary sewer laterals on private property. Work for this bid item shall include, but may not be limited to: earth bed preparation, providing, placing, compacting, and finishing topsoil, furnishing and placing sod, furnishing and placing stakes, rolling and tamping sod, mowing sod, replacing defective or deteriorated sod, and maintenance and care of sod in place.

Payment for this bid item shall be made for the number of square feet of sod installed and accepted. Private property shall be in as good or better condition as prior to construction. Sod restoration limits shall be 18 inches over the sanitary sewer lateral pipe route.

Bid Items No. 17 – Private Property Restoration- Concrete Pool Deck with Decorative Coating: The Contractor shall provide all labor, equipment, and certain materials to restore concrete pool deck with decorative coating that has been damaged due to the installation of sanitary sewer laterals on private property. Work for this bid item shall include, but may not be limited to: removal of concrete, excavation, trenching, compaction of soil, new concrete pool deck, and decorative coating.

Payment for this bid item shall be made for the number of square feet of concrete deck and coating installed and accepted. Private property shall be in as good or better condition as prior to construction. Restoration limits shall be to the nearest control joint over the sanitary sewer lateral pipe route.

Bid Items No. 18 – Private Property Restoration- Concrete Driveway: The Contractor shall provide all labor, equipment, and certain materials to restore driveways that have been damaged due to the installation of sanitary sewer laterals on private property. Work for this bid item shall include, but may not be limited to: removal of concrete, excavation, trenching, compaction of soil, and decorative coating.

Payment for this bid item shall be made for the number of square feet of driveway installed and accepted. Private property shall be in as good or better condition as prior to

construction. Restoration limits shall be to the nearest control joint over the sanitary sewer lateral pipe route.

Bid Items No. 19 – Private Property Restoration- Tree Removal: The Contractor shall provide all labor, equipment, and certain materials to removal trees that are in conflict with the installation of sanitary sewer laterals on private property as shown on Drawing C-201 at 1031 Roberta Drive. Work for this bid item shall include, but may not be limited to: removal of trees, removal of stump, clean-up, restoration, topsoil, and sod.

Payment for this bid item shall be made for the number trees removed. Private property shall be in as good or better condition as prior to construction.

Bid Items No. 20 – Private Property Restoration- Relocate Utility Shed: The Contractor shall provide all labor, equipment, and certain materials to relocate a utility shed due to the installation of sanitary sewer laterals on private property. Work for this bid item shall include, but may not be limited to: removal of concrete, excavation, trenching, compaction of soil, and new 6-inch reinforced concrete pad.

Payment for this bid item shall be made for the number of utility sheds relocated and accepted. Private property shall be in as good or better condition as prior to construction.

Bid Items No. 21 – Concrete Driveway Restoration in ROW: Contractor shall include all necessary materials, labor, equipment, and services for concrete driveway restoration in the ROW. Removal and replacement of concrete driveways includes, but is not limited to, saw cutting concrete; removal and disposal of concrete; formwork; pouring concrete; surface treatment to match existing; grading; replacement of sod; protection of concrete until it has cured.

Payment for this bid item shall be made for the number of square feet of concrete driveway installed and accepted. Restoration limits shall be to the nearest joint over the pipe route.

Bid Items No. 22 – Shell/Rock Driveway Restoration in ROW: Contractor shall include all necessary materials, labor, equipment, and services for shell/rock driveway restoration in the ROW. Removal and replacement of shell/rock driveways includes, but is not limited to, removal and disposal of shell/rock; Placing new shell/rock; surface treatment to match existing; grading; replacement of sod; protection.

Payment for this bid item shall be made for the number of square feet of shell/rock driveway installed and accepted. Restoration limits shall be to the nearest joint over the pipe route.

Bid Items No. 23 – Concrete Sidewalk Restoration in ROW: Contractor shall include all necessary materials, labor, equipment, and services for concrete sidewalk restoration in the ROW due sanitary sewer service connection and placement of cleanouts. Removal and replacement of concrete sidewalk includes, but is not limited to, saw cutting concrete;

removal and disposal of concrete; formwork; pouring concrete; surface treatment to match existing; grading; replacement of sod; protection of concrete until it has cured.

Payment for this bid item shall be made for the number of square feet of concrete sidewalk installed and accepted. Restoration limits shall be to the nearest control joint over the pipe route and placed cleanout.

Bid Items No. 24 – Concrete Curb and Gutter Restoration: Contractor shall include all necessary materials, labor, equipment, and services for concrete curb and gutter restoration in the ROW due to sanitary sewer service connections from sanitary sewer services from new and existing gravity sewer lines. Removal and replacement of concrete curb and gutter includes, but is not limited to, saw cutting concrete; removal and disposal of concrete; formwork; pouring concrete; surface treatment to match existing; replacement damaged concrete curb and gutter; grading; replacement of sod; protection of concrete until it has cured.

Payment for this bid item shall be made for the number of linear feet of concrete curb and gutter installed and accepted. Restoration limits shall extend 24 inches over the pipe route and placed cleanout.

Bid Items No. 25 – Contractor/Property Owner Coordination: The Contractor shall provide the following coordination services: contacting the property owner to schedule an installation date, meeting with the property owner prior to installation to go over the designed services route, discussion with the property owner regarding any changes to the property since the issuance of bid documents, obstructions in the designed service route not shown on the plans, and other items relevant to the installation, and meeting with the property owner after construction to ensure that there are no pending issues or concerns.

Payment shall be made for the number of property owners that the Contractor has provided coordination services. Contractor shall maintain a log book that will record the coordination hours. Log book shall include the date, address, time/duration, description of coordination efforts for each event. Contractor shall anticipate spending at least an average of thirty (30) minutes of coordination per affected property. No additional payment will be made for coordination time exceeding the anticipate amount.

Bid Items No. 26 – Remove Septic Tank: The Contractor shall provide all labor, equipment, and materials to remove and properly dispose of the septic tank whenever there is a conflict between it and the proposed sanitary sewer lateral. This bid items includes, but is not limited to, fill material; sod; applying for all required permits and performing all tasks required by the permit to place the septic tank out of service and remove the conflict; and all necessary erosion control measures, including installation and removal.

Payment for this bid item will be based on the total number of septic tanks that must be placed out service as a result of utility connections for this project.

Bid Items No. 27 – Remove and Replace Storm Inlet: Measurement for removal and replacement of stormwater inlets shall include all required labor, tools, materials, and equipment for by-pass pumping; forms; concrete; box culvert; grading; sodding; dewatering; excavation; importing structural fill; backfill; compaction and removal; and all necessary erosion control measures, including installation and removal; proper disposal of existing structure. Contractor is responsible for making their own field inspections prior to bidding to determine level of work required. The system shall remain in service during construction.

Payment for removing and replacing storm inlets, as depicted on the plans and defined in the technical specifications, will be determined by the number of each replaced storm inlet.

Bid Items No. 28 – Remove and Replace 15" RCP: Measurement for furnishing and installing 15" concrete pipe (RCP), as depicted on the plans and defined in the technical specifications, will be made at the Contract Unit Price as indicated on the Price Schedule of the Bid Form. This bid item shall include all required labor, tools, materials, and equipment for by-pass pumping; grading; sodding; dewatering; excavation; removing and disposal of pipe; importing structural fill; backfill, piping, wrapping pipe with filter fabric, rubber gaskets; and all necessary erosion control measures, including installation and removal; Contractor is responsible for making their own field inspections prior to bidding to determine level of work required. The system shall remain in service during construction.

Payment shall be made based on the horizontal distance in feet of installed pipeline measured along the top centerline, from inside wall of structure to inside wall of structure.

Bid Items No. 29 – Remove and Replace 18" RCP: Measurement for furnishing and "installing reinforced concrete pipe (RCP), as depicted on the plans and defined in the technical specifications, will be made at the Contract Unit Price as indicated on the Price Schedule of the Bid Form. This bid item shall include all required labor, tools, materials, and equipment for by-pass pumping; grading; sodding; dewatering; excavation; removing and disposal of pipe; importing structural fill; backfill, piping, wrapping pipe with filter fabric, rubber gaskets; and all necessary erosion control measures, including installation and removal. Contractor is responsible for making their own field inspections prior to bidding to determine level of work required. The system shall remain in service during construction.

Payment shall be made based on the horizontal distance in feet of installed pipeline measured along the top centerline, from inside wall of structure to inside wall of structure.

Bid Item No. 30 – Core Existing Storm Manhole: The Contractor shall provide all labor, materials, and equipment for the coring of storm manholes. Manhole coring work includes, but may not be limited to, excavation; backfilling and compacting; restoration; cutting or coring of existing manhole; maintenance of flow; removal and disposal of waste material.

Payment shall be made for each storm manhole core made by the contractor.

Bid Item No. 31 – 6" PVC Water Main: The Contractor shall provide all labor, equipment, and materials to furnish and install the PVC pipe. The furnish and installation of the PVC pipe shall include, but is not limited to: furnishing and installing approved anchors, restraints and incidentals; connections to existing systems; excavating the trench; dewatering, temporary shoring and bracing, cleaning dirt and foreign material from within pipe and bell; beveling field-cut joints and pipe shorts; furnishing and installing approved pipe and pipe shorts as part of the pipeline; furnishing and installing all required fittings as designated on the plans or as designated in the field by the Engineer and the City of Venice; furnishing and installing mechanical restraints, bell restraints, or push-on restraints on all existing or proposed pipe necessary to adequately withstand a working pressure of 150 psi, as delineated in the plans, as required by standard details or these specifications or as directed by the City of Venice. Furnishing and installing locator wire. All necessary erosion control measures, including installation and removal. All necessary restoration including but not limited to backfill, compaction, sod, irrigation, irrigation control valve boxes and wiring, landscaping, landscaping low voltage wiring and lighting, and restoring the roadway/right-of-way including temporary asphalt in conformance with these contract documents; cleaning up and removing excess water main pipe and appurtenances; flushing and pressure testing the water main, including installation and/or removal of all materials and equipment, temporary or otherwise necessary to complete this activity; and disinfecting and sampling and testing the water lines using an independent laboratory including installation and/or removal of all materials and equipment, temporary or otherwise necessary to complete this activity.

The cost of hydrostatic testing and disinfecting the PVC water mains is incidental to the installation of the water main. Furthermore, no extra compensation shall be paid to the Contractor for: Furnishing and installing brass, dry main plugs at the locations of all removed sample taps, or removing existing "end of line" or blow-off valves after the pipeline has been disinfected and prior to connecting the newly installed pipeline to the existing water main. No extra compensation shall be paid to the contractor for the following as well: furnishing, installing, and removing temporary service lines, connecting the existing meters to the temporary service lines and reconnecting the meters to the new mains. Meter service laterals shall be tested and disinfected with the water mains, and cost shall be included in the rate for the water main. Bacteriological testing must be coordinated with the Department of Health. A "passing" bacteriological test is required for construction certification.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment shall be made based on the size and the horizontal distance in feet of PVC water main installed along the top centerline of the pipe in place complete and acceptable to the City of Venice.

Bid Items No. 32 – 6" Gate Valve: The Contractor shall provide all labor, equipment and materials to completely install 6" gate valves. The valve installation shall include, but may not be limited to: excavating the trench; maintaining the trench including de-watering and bracing and sheeting where required or as directed by the Engineer and the City of Venice; furnishing and installing valve boxes; furnish and install valve in a mainline; furnish and install restraints on all valves and existing or proposed pipe necessary to adequately withstand a working pressure of 150 psi, as delineated in the plans or standard details, as directed by the field Engineer and the City of Venice or as required by the specifications; furnishing and installing complete valve box set to final grade; furnishing and installing mechanical joint restraints as required in the plans and contract documents; furnishing and installing tracer wire, furnishing and installing 57 stone as support blocks under valves installed on PVC pipeline; backfilling and compacting the trench; furnishing, forming and pouring a 6-inch thick concrete pad around each valve box located in sod or dirt or if directed by the Engineer, and the City of Venice; furnishing and installing the brass disk as required in the valve box detail; all necessary restoration including but not limited to sod, landscaping, curb, sidewalk, and restoring the roadway/right-of-way in conformance with these contract documents; furnishing paint and painting valve box cover.

Payment shall be made for the number of 6-inch valve and valve box installed and incorporated into the piping system complete, working and operating to the satisfaction of the Engineer and the City of Venice. Valves with valve boxes shall be paid for by the appropriate pay item.

Bid Items No. 33 – Fire Hydrant Assembly: The Contractor shall provide all labor, equipment and specified materials to completely furnish and/or install full and complete fire hydrant assemblies including protection posts where shown on the Plans on new and existing water mains as shown on the construction plans or as directed by the City of Venice. Hydrant assembly installation shall include, but may not be limited to: excavation of hydrant assembly trench, maintaining the trench, including dewatering, bracing, and sheeting where required or as directed by the City of Venice; anchoring the hydrant to existing or new main; furnishing and installing 6 inch PVC pipe between water main and fire hydrant; furnishing and installing the gate valve, valve box, cover, tracer wire, and brass disk; furnishing and installing tee; furnishing and installing tapping sleeve and valve; removing any plugs, caps, restraining devices, etc. from existing water mains; furnishing and installing the hydrant; furnishing and installing all mechanical thrust restraint as required in the Technical Specifications or as directed by the City of Venice; install hydrant plumb; furnishing and installing concrete thrust collars around the barrel of the hydrant; backfilling and compacting hydrant assembly trench; all necessary erosion control measures, including installation and removal.

The Contractor shall do all things necessary to completely install a fire hydrant assembly in accordance with this Technical Specification, as shown in the Plans, or as directed by The City of Venice. Payment for tees and valves shall be included with this bid item.

In addition, it shall be the Contractor's responsibility to determine the correct size (bury depth) of each hydrant installed so that the requirements of this Technical Specifications

are satisfied. Any hydrant not conforming to the proper final grade shall be replaced with one of the correct size and grade by the Contractor at his expense prior to final approval and acceptance. Fittings required because of contractor convenience, (i.e. installed because the contractor elected to install a shallow bury hydrant) shall be furnished and installed at the contractor's expense.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for fire hydrants will be determined by the actual count of each hydrant installed and accepted.

Bid Items No. 34 - Remove Existing Fire Hydrant Assembly: The Contractor shall provide all labor, equipment and materials for removal and salvage of existing fire hydrants on existing to remain water lines. Hydrant removal includes, but may not be not limited to: excavating the pit; furnishing and installing restraining devices anchoring shut off valve to the pipeline tee; removal of hydrant; removal of protections posts if new hydrant is not to be installed; removal of gate valve box and cover; capping or plugging pipe or tee; removal of concrete pad; backfilling and compacting the pit; cleaning up and restoring the job site including re-grading terrain; and properly disposing of fire hydrant. Fittings installed to secure and plug the lead will be compensated under this contract pay item.

Payment for fire hydrants will be determined by the actual count of each hydrant removed and accepted.

Bid Item No. 35 – 6" x 6" Tee: The Contractor shall provide all labor, equipment and materials to completely install tees. The tee installation shall include, but may not be limited to: excavating the trench; maintaining the trench including de-watering and bracing and sheeting; furnishing and installing tees; furnish and install restraints on all tees and existing or proposed pipe necessary to adequately withstand a working pressure of 150 psi, as delineated in the plans or standard details; backfilling and compacting the trench; all necessary restoration including but not limited to sod, landscaping, and restoring the roadway/right-of-way in conformance with these contract documents.

Payment shall be made for the number of tee's installed and incorporated into the piping system complete, working and operating to the satisfaction of the Engineer and the City.

Bid Items No. 36 – Single Water Service in ROW (near side): The Contractor shall include full compensation for all labor, excavating, and materials necessary to install a single water service on the near side of the road. Water service installation include, but not limited to, furnishing and installing the saddle, pipe, plugs, EMS 1252 water marker; excavating the trench or pit; maintaining the trench or pit, which shall include dewatering, barricading, sheeting and shoring, and containment; backfilling and compaction; furnishing and installing corporation stop; tapping of the new or existing watermain; installing and connecting the City provided water meter; any other materials, labor, and equipment needed to complete the installation of the water services.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for services will be determined by the total number of each single water service installed for properties connecting to the watermain on the near side of the road.

Bid Items No. 37 – Single Water Service in ROW (far side): The Contractor shall include full compensation for all labor, excavating, and materials necessary to install a single water service on the far side of the road. Water service installation include, but not limited to, furnishing and installing the saddle, pipe, SCH 40 PVC sleeve, plugs, EMS 1252 water marker; excavating the trench or pit; maintaining the trench or pit, which shall include dewatering, barricading, sheeting and shoring, and containment; backfilling and compaction; furnishing and installing corporation stop; tapping of the new or existing watermain; installing and connecting the City provided water meter; any other materials, labor, and equipment needed to complete the installation of the water services.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for services will be determined by the total number of each single water service installed for properties connecting to the watermain on the far side of the road.

Bid Items No. 38 – Double Water Service in ROW (near side): The Contractor shall include full compensation for all labor, excavating, and materials necessary to install a double water service on the near side of the road. Water service installation include, but not limited to, furnishing and installing the saddle, pipe, plugs, EMS 1252 water marker; excavating the trench or pit; maintaining the trench or pit, which shall include dewatering, barricading, sheeting and shoring, and containment; backfilling and compaction; furnishing and installing corporation stop; tapping of the new or existing watermain; installing and connecting the City provided water meter; any other materials, labor, and equipment needed to complete the installation of the water services.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for services will be determined by the total number of each double water service installed for properties connecting to the watermain on the near side of the road.

Bid Items No. 39 – Double Water Service in ROW (far side): The Contractor shall include full compensation for all labor, excavating, and materials necessary to install a double water service on the far side of the road. Water service installation include, but not limited to, furnishing and installing the saddle, pipe, SCH 40 PVC sleeve, plugs, EMS 1252

water marker; excavating the trench or pit; maintaining the trench or pit, which shall include dewatering, barricading, sheeting and shoring, and containment; backfilling and compaction; furnishing and installing corporation stop; tapping of the new or existing watermain; installing and connecting the City provided water meter; any other materials, labor, and equipment needed to complete the installation of the water services.

The cost for preparation and furnishing as-built drawings, signed and sealed by a surveyor registered in the State of Florida for use in obtaining FDOH/FDEP Certification shall be included in this bid item.

Payment for services will be determined by the total number of each double water service installed for properties connecting to the watermain on the far side of the road.

Bid Item No. 40 – Water Service Connection on Private Property: The Contractor's licensed plumber shall prove all labor, equipment, and certain materials to completely install new water service connections from the new water meter assemblies to each water service connection on private property. Work for this bid item shall include, but may not be limited to: excavation, maintain the trench/pit, dewatering, bracing, sheeting, erosion control measures, furnishing, installing, and connection the new service line, flushing individual service line prior to connecting the new service line to the residence, backfilling, compacting, and all ancillary materials, equipment, labor, and power required to complete installation of the water services. This work includes restoring irrigation and landscaping, including low voltage wiring and lighting.

Payment for water service connection in private property will be determined by the actual number of linear feet of services pipe installed complete, working, and accepted. Restoration of private property is not included in this bid item.

Bid Items No. 41 – Private Property Restoration - Sod: The Contractor shall provide all labor, equipment, and certain materials to restore sod that have been damaged due to the installation of water service lines on private property. Work for this bid item shall include, but may not be limited to: earth bed preparation, providing, placing, compacting, and finishing topsoil, furnishing and placing sod, furnishing and placing stakes, rolling and tamping sod, mowing sod, replacing defective or deteriorated sod, and maintenance and car of sod in place.

Payment for this bid item shall be made for the number of square feet of sod installed and accepted. Private property shall be in as good or better condition as prior to construction. Sod restoration limits shall be 18 inches over the water service pipe route.

Bid Items No. 42 – Private Property Restoration- Driveway: The Contractor shall provide all labor, equipment, and certain materials to restore driveways that have been damaged due to the installation of water service lines on private property. Work for this bid item shall include, but may not be limited to: removal of concrete, excavation, trenching, compaction of soil, and decorative coating.

Payment for this bid item shall be made for the number of square feet of driveway installed and accepted. Private property shall be in as good or better condition as prior to construction. Restoration limits shall be to the nearest joint over the water service pipe route.

Bid Items No. 43 – Relocate Existing Reclaim Water Meter: The Contractor shall provide all labor, materials and equipment for the relocation of non-potable meters as specified. All non-potable water meters are existing. Meter sets shall be installed as shown in the plans. Meter boxes shall be as specified and as shown in the plans. Meter service installation shall include, but may not be limited to, all necessary excavation; furnish and install an appropriately sized pipe, fittings, curb stop, meter box and tail piece extension as designated by the Venice Utility Department's Technical Specifications; backfilling and compacting of all excavations; restoring the job site to its original condition which includes but is not limited to restoring the elevation of surface to its original grade.

Payment shall be made for each non-potable meter service relocated, and accepted.

Bid Items No. 44 – Relocated Existing Dual Check Valve Assemblies: The Contractor shall provide all labor, equipment, and materials to remove existing dual check valve assemblies (DuC) on water services to be relocated. Relocated DuC assemblies shall meet all applicable code. DuC assemblies are required for residential customers that use well water or reclaimed water for irrigation. The DuC assembly installation shall include but not limited to: removing backflow device (BFD) from the existing service, fittings, piping, accessories needed for complete installation, and repairs if leaks are present after installation.

Note: Residential customers that do not have a well or irrigation system are not required to have a BFD installed and will have any existing BFD removed. If a residential service has an existing DuC above grade that was relocated below grade by the licensed plumber contracted to perform this work by the homeowner, the existing thermal expansion must be relocated to the water service connection at the house by the Contractor's plumber. If thermal expansion did not exist on an existing DuC, it must be provided on any relocated DuC and installed by the Contractor's plumber. Contractor shall coordinate with the homeowner for timing of installation.

Bid Items No. 45 – Remove Reduced Pressure Assembly and Replace with Dual Check Valve Assembly: The Contractor shall provide all labor, equipment, and materials to remove existing reduced pressure assembly and replace with a new dual check valve assemblies (DuC) on water services. Relocated DuC assemblies shall meet all applicable code. DuC assemblies are required for residential customers that use well water or reclaimed water for irrigation. The DuC assembly installation shall include but not limited to: removing the backflow device (BFD) from the existing service, miscellaneous fittings, piping, and accessories necessary for a complete installation, and repairs if leaks are present after installation.

Note: Residential customers that do not have a well or irrigation system are not required to have a BFD installed and will have any existing BFD removed. If a residential service has an existing DuC above grade that was relocated below grade by the licensed plumber contracted to perform this work by the homeowner, the existing thermal expansion must be relocated to the water service connection at the house by the Contractor's plumber. If thermal expansion did not exist on an existing DuC, it must be provided on any relocated DuC and installed by the Contractor's plumber. Contractor shall coordinate with the homeowner for timing of installation.

Bid Item No. 46 – Place 4" Pipe Out of Service: The unit price for placing pipe out of service shall include all costs for furnishing, handling, and placing all grout material into the pipe and manhole, providing caps or plugs and thrust blocks to prevent grout intrusion into "in-service" pipe, removal and disposal of remaining existing sewer materials in the system, removal of all manhole covers and frames, and restoration of areas disturbed to perform this bid item. Placing all pipes and manholes out of service shall be measured length in linear feet through existing valves, fittings, and manholes. The grout material shall be flowable-fill and will fill all voids within the abandoned pipes. Contractor shall provide venting as necessary to assure that there are no air gaps in the pipe causing voids to form in grout injected into pipe

Payment for placing pipes out of service will be determined by the actual horizontal distance in linear feet of pipe grout filled.

Bid Items No. 47 – 6" Insertion Valve: The Contractor shall provide all labor, equipment and materials to completely install 6" insertion valves. The valve installation shall include, but may not be limited to: excavating the trench; maintaining the trench including de-watering and bracing and sheeting where required or as directed by the Engineer and the City of Venice; furnishing and installing valve boxes; furnish and install valve in a mainline; furnish and install restraints on all valves and existing or proposed pipe necessary to adequately withstand a working pressure of 150 psi, as delineated in the plans or standard details, as directed by the field Engineer and the City of Venice or as required by the specifications; furnishing and installing complete valve box set to final grade; furnishing and installing mechanical joint restraints as required in the plans and contract documents; furnishing and installing tracer wire, furnishing and installing 57 stone as support blocks under valves installed on PVC pipeline; backfilling and compacting the trench; furnishing, forming and pouring a 6-inch thick concrete pad around each valve box located in sod or dirt or if directed by the Engineer, and the City of Venice; furnishing and installing the brass disk as required in the valve box detail; all necessary restoration including but not limited to sod, landscaping, curb, sidewalk, and restoring the roadway/right-of-way in conformance with these contract documents; furnishing paint and painting valve box cover.

Payment shall be made for the number of 6-inch valve and valve box installed and incorporated into the piping system complete, working and operating to the satisfaction of the Engineer and the City of Venice.

Bid Items No. 48 - Pavement Restoration: Contractor shall include all necessary materials, labor, equipment and services for furnishing and installing the asphalt resurfacing; surface sweeping, bituminous tacking, milling, adjusting existing utility boxes/lids as necessary, replace and set new frames and covers for all sanitary and stormwater manholes, cleaning outer edges, traffic control, testing, cleanup, replacement of stripping, reflectors or other markings obliterated by overlay and all other incidentals as required to complete per details for installing asphalt overlay complete in place. Asphalt overlay shall be from outside of edge of roadway to outside edge of roadway for all areas where the existing asphalt roadway is cut for the installation of pipelines.

Payment for furnishing and installing asphalt resurfacing (minimum 1.5" thick) will be made at the Contract Unit Price per square yard in place and accepted.

Bid Item No. 49 – Additional Mill and Resurface Pavement: This bid item includes additional pavement mil and resurface outside of the pavement restoration required for the Venetian Parkway Water and Sanitary Sewer Relocation. Refer to Drawing P-001. Contractor shall include all necessary materials, labor, equipment and services for furnishing and installing the asphalt resurfacing; surface sweeping, bituminous tacking, milling, adjusting existing utility boxes/lids as necessary, replace and set new frames and covers for all sanitary and stormwater manholes, cleaning outer edges, traffic control, testing, cleanup, replacement of stripping, reflectors or other markings obliterated by overlay and all other incidentals as required to complete per details for installing asphalt overlay complete in place. Asphalt overlay shall be from outside of edge of roadway to outside edge of roadway for all areas indicated on the Drawings.

Payment for furnishing and installing asphalt resurfacing (minimum 1.5" thick) will be made at the Contract Unit Price per square yard in place.

Bid Item No. 50 – Full Road Base Restoration: Contractor shall include all necessary materials, labor, equipment and services for furnishing and installing the full road base restoration in accordance with Detail ENG-3; including but not limited to milling/excavating existing road surface to a depth of 5 inches, replacement of base materials, replacement of asphalt wearing surface, surface sweeping, bituminous tacking, milling, adjusting existing utility boxes/lids as necessary, replace and set new frames and covers for all sanitary and stormwater manholes, cleaning outer edges, traffic control, testing, cleanup, replacement of stripping, reflectors or other markings obliterated by overlay and all other incidentals as required to complete per details for installing asphalt base repair and overlay complete in place. Asphalt overlay shall be from outside of edge of roadway to outside edge of roadway for all areas where the road base is known to be failing, at the locations to be provided by the Owner.

Payment for full road base restoration, per Detail ENG-3, will be made at the Contract Unit Price per square yard in place.

Bid Item No. 51 – Sanitary Sewer Service for 1000 Pinebrook Road: Contractor shall include all necessary materials, labor, equipment and services for furnishing and installing the gravity sewer service for 1000 Pinebrook Road and removal of the existing gravity sewer service as shown on C-508; including but not limited to; clearing and grubbing the location of the existing and proposed sanitary sewer laterals; grassing of all disturbed areas as part of the installation of the proposed sanitary sewer laterals; coring of manhole, excavation, pipe, cleanouts, fittings, backfill, compaction, reconnection to the existing service connection at one or more locations as shown on the plans, irrigation, landscaping, low voltage wiring and lighting; placing sewer laterals out of service, including but not be limited to, all costs for furnishing, handling, and placing all grout material into the pipe and manhole; providing caps or plugs adequate to prevent grout intrusion; removal and disposal of remaining existing sewer materials in the system; any other materials, labor, and equipment needed to place the lateral out of service. The grout material shall be flowable-fill and will fill all voids within the abandoned pipes. Contractor shall provide venting as necessary to assure that there are no air gaps in the pipe causing voids to form in grout injected into pipe.

Payment for the sanitary sewer services for 1000 Pinebrook Road will be lump sum when the sanitary sewer services are complete, working and operating to the satisfaction of the Engineer and the City of Venice.

ALLOWANCES

Bid Items No. A1 – Owner's Allowance: This Bid Item entails minor increases to existing bid item quantities or minor modification items not bid which were unforeseen and necessary during the construction to provide a safe, complete project in accordance with the Bid Documents. Authorization for use of any of this Bid Item shall be made by the City of Venice in writing prior to performing the associated work. In general, this item is for unanticipated conflicts and/or design changes required during construction which are necessary to complete the project without changing the initial Scope of Work and without costly delays.

Bid Items No. A2 – Permitting Allowance: Payment will be made to the Contractor based on actual invoiced amounts paid by the Contractor to obtain required Building Permits and inspections and for the FDEP Notice of Intent to Discharge Stormwater from Construction Activities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01152

APPLICATIONS FOR PAYMENT

PART 1 –GENERAL

1.1 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to the Engineer in accordance with the schedule as approved by the Owner.

B. Contractor shall submit to the Engineer for review, the proposed Application for Payment form and stored materials tracking form, prior to the first Payment Request.

1.2 FORMAT AND DATA REQUIRED

A. Submit applications typed on forms either provided in these Specifications, furnished by the Owner, as approved by the Owner, with itemized data typed on 8-1/2 inch x 11 inch white paper continuation sheets.

B. Provide itemized data on continuationsheet:

1. Format, schedules, line items and values: those of the Schedule of Values accepted by the Engineer.

1.3 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of the Contractor.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of work, with item number and scheduled dollar value for each item.

2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.

3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.

    a. List by Change Order Number, and description, as for an original component item of work.

4. To receive approval for payment on component material stored on site, submit copies of the original invoices with the Application for Payment. The application for payment must also include a table summarizing the amount of each invoice and the schedule of values line item to which the stored materialsapply.

1.4 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. Provide substantiating data, containing suitable information for review of costs requested with a cover letter identifying:

1. Project.

2. Application number and date.

3. Detailed list of enclosures.

4. For stored products:

    a. Item number and identification as shown on application.

    b. Description of specific material.

    c. Supplier invoices.

    d. A table identifying stored material, amount stored, amount installed, monthly activities report, updated cash flow chart, progress photos, and schedule of values item which the material applies.

B. Submit one copy of data and cover letter for each copy of application.

C. The Contractor is to maintain an updated set of As-built Drawings to be used as record drawings. As a prerequisite for monthly progress payments, the Contractor shall exhibit the updated record drawings for review by the Owner, the Engineer, or their dedicated representatives.

D. Contractor shall maintain an updated construction schedule in accordance with the Specifications. As a prerequisite for monthly progress payments, Contractor shall submit the updated construction schedule with the applications for progress payments. If the Contractor fails to submit the required updated schedule within the time prescribed, the Engineer may withhold approval of progress payment estimates until such a time as the Contractor submits the required updated schedule.

1.5 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in the Specification.

C. All appropriate information must be entered on the application form.

1. The line title, "Application Period", must indicate the dates between which all work was completed during the pay period. The period is defined from the first day of the month to the last day of the month, i.e. June 1, 2018 to June 30, 2018.

2. All blank lines within the "Contract Data" and "Summary of Project Status" section of the application must be completed. Also, if any Change Orders have been approved, the "Change Orders" section must include that information.

3. All calculations and arithmetic must be precise to the penny.

4. The application must be signed and dated by an authorized representative of the Contractor and notarized.

1.6 SUBMITTAL PROCEDURE

A. Prior to submitting a completed Payment Request, the Contractor must arrange a field meeting with the Owner's Representative to review and verify all installed quantities and/or stored material. Only when the Owner's Representative and Contractor agree on installed quantities and percentages, should the Payment Request be submitted.

B. Submit six (6) copies of Applications for Payment to the Engineer at the times stipulated in the General Conditions.

C. When the Engineer finds Application properly completed and correct, he will transmit certificate for payment to Owner, with copy to Contractor.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01153

CHANGE ORDER PROCEDURES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Promptlyimplement Change Order procedures.

1. Provide full written data required to evaluate changes.

2. Maintain detailed records of work done on a time and material/force account basis.

3. Provide full documentation to Engineer on request.

B. Designate in writing the member of Contractor's organization:

1. Who is authorized to accept changes in the work;

2. Who is responsible for informing others in the Contractor's employ of the authorization of changes in the work.

1.2 PRELIMINARY PROCEDURES

A. Owner and Engineer may initiate changes by submitting a Work Change Directive to the Contractor. Request will include:

1. Detailed description of the change, products, and location of the change in the Project.

2. Supplementary or revised Drawings and/or Specifications.

3. The projected time span for making the change, and a specific statement as to whether overtime work is or is notauthorized.

4. A specific period of time during which the requested price will be considered valid.

B. Contractor may initiate changes by submitting a written notice to the Engineer, prior to the work being performed, containing:

1. Description of the proposed changes.

2. Statement of the reason for making the changes.

3. Statement of the effect on the Contract Sum and the Contract Time.

4. Statement of the effect on the work of separate contractors.

5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.3 CONSTRUCTION CHANGE AUTHORIZATION

A. Work Change Directive will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate the method of determining any change in the Contract Sum and any change in Contract Time.

B. Owner and Engineer will sign and date the Work Change Directive as authorization for the Contractor to proceed with the changes.

1.4 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow the Engineer to evaluate the quotation.

B. On request, provide additional data to support time and cost computations:

1. Labor required.

2. Equipment required.

3. Products required.

a. Recommended source of purchase and unit cost.

b. Quantities required.

4. Taxes, insurance, and bonds.

5. Credit for work deleted from Contract, similarly documented.

6. Overhead and profit.

7. Justification for any change in Contract Time.

C. Support each claim for additional costs, and for work done on a time-and-

material/force account basis, with documentation as required for a Lump Sum proposal, plus additional information:

1. Name of the Owner's authorized agent who ordered the work and date of the order.

2. Dates and times work was performed and by whom.

3. Time record, summary of hours worked, and hourly rates paid.

4. Receipts and invoices for:

   a. Equipment used, listing dates, and times of use.

   b. Products used, listing of quantities.

   c. Subcontracts.

1.5 PREPARATION OF IFCAs, CHANGE ORDERS AND FIELD ORDERS

A. Engineer will prepare each Change Order and Field Order.

B. Contractor shall prepare draft IFCA for review by the Engineer and Owner. IFCA shall describe changes in the Work, both additions and deletions, and effects on existing pay items. Contractor shall provide all necessary documentation to justify changes in cost.

C. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

E. Field Order will describe interpretations or clarifications of Contract Documents, order minor changes in the Work, and/ or memorialize trade-off agreements.

F. Field Order work will be accomplished without change in the Contract Sum, Contract Time, and/or claims for other costs.

1.6 UNIT PRICE IFCA or CHANGE ORDER

A. Content of IFCAs or Change Orders will be based on either:

1. Engineer's definition of the scope of the required changes.

2. Contractor's Proposal for a change, as recommended by Engineer.

3. Survey of complete work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.

2. Those mutually agreed upon between Owner and Contractor.

C. When quantities of each of the items affected by the IFCA or Change Order can be determined prior to start of the work:

1. Owner and Engineer will sign and date a Work Change Directive as authorization for Contractor to proceed with the changes.

D. When quantities of the items cannot be determined prior to start of the work:

1. Engineer or Owner will issue a Work Change Directive directing the Contractor to proceed with the change on the basis of unit prices, and the Engineer will cite the applicable unit prices.

2. Upon completion of the change, the Engineer will determine the cost of such work based on the unit prices and quantities used. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.

3. Engineer will sign and date the IFCA or Change Order.

4. Contractor will sign and date the IFCA or Change Order to indicate their agreement with the terms therein.

5. Owner will then sign the IFCA or Change Order.

1.7 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/CONSTRUCTION CHANGE AUTHORIZATION

A. Engineer and Owner will issue a Work Change Directive directing Contractor to proceed with the changes.

B. Upon completion of the change, the Contractor shall submit itemized accounting and supporting data.

C. Engineer will determine the allowable cost of such work.

D. Engineer will sign and date the IFCA or Change Order.

E. Contractor will sign and date the IFCA or Change Order to indicate agreement therewith.

F. Owner will then sign the IFCA or Change Order.

1.8 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Work completed in an IFCA or Change Order cannot be included in the Contractor's application for payment until the IFCA or Change Order is fully executed.

B. Not greater than monthly revise Schedule of Values and Request for Payment forms to record each change as a separate item of work and to record the adjusted Contract Sum.

C. Not greater than monthly revise the Construction Schedule to reflect each change in Contract Time. Revise subschedules to show changes for other items of work affected bythe changes.

D. Upon completion of work under an IFCA or Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01200

PROJECT MEETINGS

PART 1 – GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The Engineer shall schedule and administer a preconstruction meeting, periodic progress meetings and specially called meetings throughout the progress of the work and shall be responsible for the following:

1. Prepare agenda for meeting.

2. Distribute written notice of each meeting.

3. Make physical arrangements for meeting.

4. Preside at meetings.

5. Record the minutes; include all significant proceedings and decisions.

6. Reproduce and distribute copies of minutes:

a. To all participants in the meeting.

b. To all parties affected by decisions made at the meeting.

B. Representatives of the Design and Construction Engineer, other Utility Companies, Contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.2 PRE-CONSTRUCTION MEETING

A. Schedule within ten (10) days after date of Agreement between Owner and Contractor.

B. Location: A central site, convenient for all parties.

C. Attendance:

1. Representative from the City of Venice, Utilities Department.

2. Resident City Inspector.

3. Contractor's Superintendent.

4. Major Subcontractors.

5. Major Suppliers.

6. Others as Appropriate.

D. Suggested Agenda:

1. Distribution and discussion of:

a. List of major subcontractors and suppliers.

b. Projected Construction Schedules.

2. Critical Work Sequencing.

3. Major equipment deliveries and priorities.

4. Project Coordination.

a. Designation of responsible personnel.

5. Procedures and processing of:

a. Field decisions.

b. Proposal requests.

c. Submittals.

d. Change Orders.

e. Applications for Payment.

6. Adequacy of distribution of Contract Documents.

7. Procedures for maintaining Record Documents.

8. Use of premises:

a. Office, work and storage areas.

b. Owner's requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Safety and first-aid procedures.

12. Security procedures.

13. Housekeeping procedures.

1.3 PROGRESS MEETINGS

A. Schedule regular periodic meetings, as required.

B. Hold called meetings as required by progress of the Work.

C. Attendance:

1. Project Owner.

2. Resident City Inspector.

3. Contractor and subcontractor as appropriate to the Agenda.

4. Suppliers as appropriate to the Agenda.

5. Other Utility Companies.

D. Suggested Agenda:

1. Review, approval of minutes of previous meeting.

2. Review of Work progress since previous meeting.

3. Field observation, problems, and conflicts.

4. Problems that impede Construction Schedule.

5. Review of delivery schedules.

6. Corrective measures and procedures to regain projected schedule.

7. Revisions to Construction Schedule.

8. Plan progress, schedule; expedite as required.

9. Coordination of schedules.

10. Review submittal schedules; expedite as required.

11. Maintenance of quality standards.

12. Review proposed changes for:

    a. Effect on Construction Schedule and on completion date.

    b. Effect on other contracts of the Project.

13. Other business.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01310

CONSTRUCTION

SCHEDULES

PART 1 - GENERAL

1.1 GENERAL

A. Construction under this contract must be coordinated to assure that construction is completed within the time allowed by the Contract Documents. The Contractor will also coordinate his activities with the other contractors to allow orderly and timely completion of all the work.

B. All construction schedules shall be of the critical path method, bar chart type, and shall be prepared using SURETRACK, PRIMAVERA P3, or equal.

1.2 CONSTRUCTION SCHEDULING GENERAL PROVISIONS

A. Within 10 calendar days after the issuance of the Notice to Proceed, the Contractor shall prepare and submit to the Engineer a preliminary construction progress schedule. Applications for Payment will not be approved until an acceptable construction progress schedule has been approved by the Engineer.

B. The schedule shall be updated monthly reflecting the approved baseline schedule and the Contractor's progress on each activity. No progress payment will be approved until the updated schedule is submitted and approved by the Engineer.

C. Night work may be established by the Contractor as regular procedure only with the prior written permission of the Owner. Such permission, however, may be revoked at any time by the Owner if the Contractor fails to maintain adequate equipment and supervision for the proper execution and control of the work at night.

D. The Contractor shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the Contractor shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the commitments of the Contractor's schedule.

1.3 PROGRESS OF THE WORK

A. The work shall be executed with such progress as may be required to prevent any delay to the general completion of the work. The work shall be executed at such

times and in or on such parts of the project, and with such forces, materials and equipment to assure completion of the work in the time established by the Contract.

B. If the Contractor for his convenience and at his own expense, should desire to carry on his work at night or outside regular hours, he shall submit written notice to the Engineer and he shall allow ample time for satisfactory arrangements to be made for inspecting the work in progress. The Contractor shall reimburse the Owner for extra inspection required for work outside regular hours. The Contractor shall light the different parts of the project as required to complywithall applicable Federal and State regulations and with all applicable requirements of the municipality in which the work is being done.

C. In general, work shall progress from street to street and shall be depicted as such on the schedule.

PART 2 - PROGRESS SCHEDULE SUBMITTALS

2.1 GENERAL REQUIREMENTS

A. The Contractor shall submit a critical path progress schedule as described herein. The schedule shall take into considerations all work phasing and restrictions as specified elsewhere in the Contract Documents.

B. The critical path progress schedule requirement will consist of a detailed schedule, monthly status reports (Monthly Reports), a start-up schedule, and revisions to the schedules and analyses as described. The planning, scheduling, management and execution of the work are the sole responsibilities of the Contractor. The progress schedule shall allow Engineer to review Contractor's planning, scheduling, management and execution of the work; to assist Engineer in evaluating work progress and make progress payments; to allow other contractors to cooperate and coordinate their activities with those of the Contractor; and to provide Owner with information about "construction schedule" and "cumulative outlay schedule."

C. Engineer's review of the schedule submittals shall not relieve Contractor from responsibility for any deviations from the Contract Documents unless Contractor has in writing called Engineer's attention to such deviations at the time of submission and Engineer has given written concurrence to the specific deviations, nor shall any concurrence by Engineer relieve Contractor from responsibility for errors and omissions in thesubmittals.

D. Float or slack time is not for the exclusive benefit of the Owner, the Engineer or the Contractor. Extensions of time for performance, as specified in the General and Supplementary Conditions, will be granted only to the extent that equitable time adjustments for the network activity, or activities affected, exceed the total float

or slack time along the affected network paths, as shown in the precedence diagram and computer printout report in effect at the instant of either (a) a notice to proceed with a change, or (b) a notice of suspension of work or possession, or (c) detection of a subsequently acknowledged differing site condition, or (d) occurrence of cause for an excusable delay. Further, use of float time in the schedule, or the allocation of float time to activities by means of special logic restraints or imposed dates, shall be shared to the benefit of Owner, Engineer, Contractor, and his subcontractors and suppliers in proportion of their scope of responsibilities. Excessive use of float time to the detriment of succeeding activities may be cause for denying an extension of time if it can be demonstrated that the float along the network paths affected at the instant of the delaying condition would have been larger than the delay had it not been for the excessive and unreasonable float usage in violation of the sharing concept required by this Specification.

E. Engineer's review of the schedule submittals shall be only for conformance with the information given in the Contract Documents and shall not extend to the means, methods, sequences and techniques or procedures of construction or to safety precautions or programs incident thereto. Engineer's review of the schedule submittals will be predicated on a Contractor's stamp of approval signed off by Contractor. Contractor's stamp of approval on any schedule submittals shall constitute a representation to Owner and Engineer that Contractor, has either determined or verified all data on the submittal, or assumes full responsibility for doing so, and that Contractor and his subcontractors and suppliers have reviewed and coordinated the sequences shown in the submittal with the requirements of the work under the Contract Documents.

2.2 SUPPLEMENTARY REQUIREMENTS

A. Graphic network diagrams shall be on a time-scaled precedence network format. The graphic network diagram shall include the following format:

1. Description of each activity, or restraint, shall be brief but convey the scope of work described.

2. Activities shall identify all items of work that must be accomplished to achieve substantial completion, or any interim substantial completion, such as the major disciplines of work; items pertaining to the approval of regulatory agencies; contractor's time required for submittals, fabrication and deliveries; the time required by Engineer to review all submittals as set forth in the Contract Documents; items of work required of Owner to support pre-operational and start-up testing; time required for the relocation of utilities. Activities shall also identify interface milestones with the work of other contract work under separate contracts with Owner.

3. Any activities not shown on the graphic network diagram shall be

considered to have no effect on the Contractor's ability to achieve substantial completion, or interim substantial completion, within the Contract Time. Any delays to activities that do not appear in the concurred detailed schedule shall give rise only to non-prejudicial delays. Attempts to impose after-the-fact logic constraints where none existed previously to justify time extensions will not be permitted.

4. Activity durations shall be in whole working days.

5. Graphic diagrams shall be time-scaled and sequenced by work areas. The Diagram of Activities shall show numerical values for total float and be shown on their early schedules. The diagram shall be neat and legible and submitted on sheets no larger than 11 inches by 17 inches on a medium suitable for reproduction.

6. All relationships and the critical path shall be shown. The critical path bars shall be different color than other task bars.

B. Printout reports shall contain the following data for each activity or restraint:

1. Activityidentification, activitydescription, activity duration, activityman-days, computed or specified early start date, computed early finish date, computed late start date, computed or specified late finish date, and total float and free float.

2. Five separate reports shall be provided, including all activities and restraints, and shall be submitted monthly as follows:

a. Activity, sort by early start dates in order of ascending numbers.
b. Activity, sort bydepartment.
c. Float report, in order of ascending total float values.
d. Successor/predecessor report.

PART 3 – EXECUTION

3.1 DETAILED SCHEDULE SUBMITTAL

A. Submittal shall include a time-scaled graphic diagram showing all Contract activities, computer printout reports, and a supporting narrative. The initial Detailed Schedule submittal shall be delivered within 10 calendar days after the Notice to Proceed, and shall use the Notice to Proceed as the “data date”. Upon receipt of Engineer's comments, Contractor shall meet with Engineer and discuss an appraisal and evaluation of the proposed work plan. Necessary revisions resulting from this review shall be made by Contractor and the detailed schedule resubmitted within 15 calendar days after the meeting. The re-submittal, if concurred with by Owner, and unless subsequently changed with the concurrence

of or at the direction of Owner, shall be the work plan to be used by the Contractor for planning, scheduling, managing and executing the work. If Contractor fails to provide an acceptable Detailed Schedule submittal, he will be deemed not to have provided a basis upon whichprogress may be evaluated, which will further constitute reasons for refusing to recommend payment.

B. The graphic diagram shall be formatted in accordance with Article 2.02(A) above. The diagram shall include (1) all detailed activities grouped by major areas of work. The critical path activities shall be identified, including critical paths for interim dates, if applicable, by clearly highlighting the path on the graphics diagram.

C. This submittal shall include five copies of the graphic diagram, the printout reports and the narrative, in accordance with Article 2.02 of these scheduling requirements.

D. The narrative shall include sufficient data to explain the basis of Contractor's determination of durations, describe the contract conditions and restraints plugged into the schedule, and provide a "what-if" analysis pertaining to potential problems and practical steps to mitigate them. Should Engineer require additional data, this information shall be supplied by Contractor within ten calendar days.

E. The schedule shall include tasks for testing, disinfection and clearance of the new mains as well as As- Built drawingsubmittal.

3.2 MONTHLY STATUS REPORTS

A. Beginning with the first month, and every month thereafter, Contractor shall submit to Engineer a Monthly Status Report (based on the Detailed Schedule) with data as of the last day of the pay period. The monthly Status Report shall include a revised copy of the currently accepted graphic diagram, computer printouts and a narrative. The Monthly Status Report will be reviewed by the Engineer. The Contractor will address the Engineer's comments in the subsequent Monthly Status Report. If Contractor fails to provide acceptable Monthly Status Reports, he will be deemed not to have provided a basis upon which progress may be evaluated, which will be reason for refusing to recommend progress payments.

B. The revised diagram shall show, for the currently accepted detailed diagram, percentages of completion for all activities, actual start and finish dates, and remaining durations, as appropriate. Activities not previously included in the currently accepted detailed schedule shall be added. Activity durations shall not be changed, except by updates of the actual start and completion dates. If this should result in the schedule showing the project being completed late, the Contractor shall make up time on subsequent tasks to be completed so that on future schedule submittals inclusion of actual completion dates results in the project being completed within the contract milestone dates.

C. Review and acceptance of a revised diagram by the Engineer, and/or approval of an associated Application for Payment, shall not be construed to constitute concurrence with the time frames, duration, or sequencing shown on the schedule. Contractual dates shall only be accepted as changed through an approved Change Order.

D. The narrative shall include the information shown in the following outline in a narrative form:

1. Construction progress (refer to activity number in the Detailed Schedule) including:
   a. Activities completed this reportingperiod;
   b. Activities in progress this reportingperiod;
   c. Activities scheduled to commence next reporting period.

2. Description of problem areas

3. Current and anticipated delays
   a. Cause of the delay;
   b. Corrective action and schedule adjustments to correct the delay;
   c. Impact of the delay on other activities, on milestones, and on completion dates.

4. Changes in construction sequence or relationships

5. Pending items and status thereof
   a. Permits
   b. Change Orders
   c. Time extensions
   d. Other

6. Contract completion date status
   a. Ahead of schedule and number ofdays
   b. Behind schedule and number ofdays

3.3 REVISIONS

A. All revised Detailed Schedule submittals shall be in the same form and detail as the initial submittal and shall be accompanied by an explanation of the reasons for such revisions, all of which shall be subject to review by Engineer. The revision shall incorporate all previously made changes to reflect current as-built conditions. Minor changes to the submittal may be reviewed at monthly meetings. Changes to activities having adequate float shall be considered a minor change.

B. A revised detailed work plan submittal shall be submitted for review, when required by Engineer, for one of the followingreasons:

1. Owner or Engineer directs a change that affects the date(s) specified in the Agreement or alters the length of a criticalpath.

2. Contractor elects to change any sequence of activities so as to affect a critical path of the currentlyaccepted detailed schedule documents.

C. If, prior to agreement on an equitable adjustment to the Contract Time, Engineer requires revisions to the Detailed Schedule in order to evaluate planned progress, Contractor shall provide an interim revised submittal for review with change effect(s) incorporated as directed. Approved interim revisions to the documents will be incorporated during the first subsequent Monthly Status Report.

3.4 CONSTRUCTION PERIOD

A. Whenever it becomes apparent from the current monthly progress evaluation and updated schedule data that any milestone and/or Contract completion date will not be met, the Contractor shall take appropriate action to bring the work back on schedule. Actions could include:

1. Increase construction manpower in such quantities and crafts as to substantially eliminate the backlog of work;

2. Increase the number of working hours per shift, shifts per work day, work days per week, or the amount of construction equipment, or any combination of the foregoing sufficient to substantially eliminate the backlog of work; and

3. Reschedule work items to achieve concurrency of accomplishment.

B. The addition of equipment or construction forces, increasing the working hours or any other method, manner, or procedure to return to the current Detailed Schedule shall be at the Contractor's own cost and shall not be considered justification for a Change Order or treated as an accelerationorder.

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SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall submit to the Engineer for review such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this Section called data), and material samples (hereinafter in this Section called samples) as are required for the proper control of work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.

B. The Contractor shall submit a Schedule of Submittals at the preconstruction meeting listing his anticipated submittals and their proposed submittal date. The Engineer will review and approve the Schedule of Submittals for general completeness and with respect to the project schedule. In general, one submittal shall be provided for each specification section. A preliminary list of expected submittal packages is provided at the end of this specification. Other submittals may be required by other specifications and the Engineer and Owner reserve the right to require additional submittals.

C. The Contractor shall note that there are specific submittal requirements in other sections of these Specifications.

1.2 SHOP DRAWINGS

A. When used in the Contract Documents, the term "shop drawings" shall be considered to mean Contractor's Drawings for material and equipment which become an integral part of the Project. These drawings shall be complete and detailed. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, bills of material, wiring and control diagrams, and inspection and test reports including performance curves and certifications as applicable to the Work.

B. All details on shop drawings submitted for review shall show clearly the elevations of the various parts to the main members and lines of the structure and/or equipment, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the shop drawings before being submitted for review.

1.3 PRODUCT DATA

A. Product data as specified in individual sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturers product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare- parts listing storage instructions, and printed product warranties, as applicable to the work.

1.4 WORKING DRAWINGS

A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's Drawings for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and falsework; for underpinning; and for such other work as may be required for construction but does not become an integral part of the Project.

B. Working drawings shall be signed and sealed by a registered Professional Engineer, currently licensed to practice in the State and shall convey, or be accompanied by, calculations or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior to commencing such work, working drawings must have been reviewed without specific exceptions by the Engineer. Such review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error are assumed by the Contractor; the Owner and Engineer shall have no responsibility therefore.

1.5 SAMPLES

A. The Contractor shall furnish, for review of the Engineer, samples required by the Contract Documents or requested by the Engineer. Samples shall be delivered to the Engineer as specified or directed and in quantities and sizes as specified. A minimum of two samples of each item shall be submitted unless otherwise specified. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until reviewed by the Engineer.

B. Samples specified in individual sections, include, but are not necessarily limitedto, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products,

color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the Work.

C. The Contractor shall prepare a transmittal letter for each shipment of samples. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the Engineer. Review of a sample shall be only for the characteristics or use named in such review and shall not be construed to change or modify any Contract requirements.

1.6 SUBMITTAL REQUIREMENTS

A. The Contractor shall review, approve, and submit, with reasonable promptness and in such sequence, so as to cause no delay in the Contract Work or in the Work of the Owner or any separate contractor, all shop drawings, product data, working drawings and samples required by the Contract Documents.

B. Submittals shall be made electronically, in PDF format. When necessary for larger submittals or for legibility, or at the request of the Engineer, submittals shall be made in hardcopy.

C. The Contractor will be provided with a standard Submittal Cover Sheet that shall be provided with all shop drawings, product data, working drawings and samples. The Cover Sheet shall be filled in with the following information:

1. Number and title of thedrawing.

2. Date of drawing or revision.

3. Name of project building, facility or system.

4. Name of contractor, subcontractor, and manufacturer submitting drawing.

5. Clear identification of contents, location of the work, and the sheet numbers and/or specification where the product is found in the Contract Documents.

6. Contractor Certification Statement.

7. Submittal Identification Number.

C. All items specified are not necessarily intended to be a manufacturer's standard product. Variations from specified items will be considered on an "or equal" basis. If submittals show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal and on the shop drawings along with

notification of his intent to seek contract adjustment. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations he shall not be relieved of the responsibility for executing the work in accordance with the Contract, even though such drawings have been reviewed. Variations submitted but not described may be cause for rejection. Any variations initiated by the Contractor will not be considered as an addition to the scope of work unless specifically noted and then approved as such in writing by the Engineer.

D. Data on materials and equipment shall include materials and equipment lists giving, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, material, size, finish and all other pertinent data.

E. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name, and address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained. In addition, a maintenance and lubrication schedule for each piece of equipment shall be submitted

F. All working drawing shall be scaled drawings and shall be generated using Computer-Aided Design (CAD) software.

G. The Contractor shall use the color "green" to make his remarks on the Submittals. Only the Engineer will utilize the color "red" in marking submittals.

1.7 CONTRACTOR'S RESPONSIBILITY

A. It is the duty of the Contractor to check, and coordinate with the work of all trades, all drawings, data, schedules and samples prepared by or for him before submitting them to the Engineer for review. Each and every copy of any drawing or data sheet larger than 11"x17" shall bear Contractor's stamp showing that they have been so checked and approved. Drawings or data sheets 11"x17" and smaller shall be bound together in an orderly fashion and bear the Contractor's stamp on the cover sheet. The cover sheet shall fully describe the packaged data and include a list of all sheet numbers within the package. Shop drawings submitted to the Engineer without the Contractor's stamp will be returned to the Contractor, without review at the Engineer's option, for conformance with this requirement.

B. The Contractor shall review shop drawings, product data, and samples prior to submission to determine and verify the following:

1. Field measurements.
2. Field construction criteria.
3. Manufacturer's catalog numbers and similar data.
4. Conformance with Specifications.

C. Shop drawings shall indicate any deviations in the submittal from the requirements of the Contract Documents.

D. It is considered reasonable that the Contractor shall make complete and acceptable submittals and initial responses to comments. Accordingly, allowance is made for two reviews of each submittal (initial submittal plus one re-submittal to respond to the Engineer's comments). The Owner shall withhold $500 from the Contractor's payments for each 3rd and subsequent reviews of each submittal to compensate the Engineer for the additional reviews. Incomplete submittals not reviewed and returned to the Contractor will count as a submittal.

E. At a time decided upon at the preconstruction meeting the Contractor shall furnish the Engineer a Shop Drawing schedule fixing the respective dates for the initial submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall be provided as a separate entity and indicate those submittals that are critical to the progress schedule. The Contractor shall prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit complete and acceptable submittals sufficiently in advance of the Work.

F. The Contractor shall not begin any work affected by a submittal returned, "Rejected. Revise as indicated and resubmit". Before starting this work all revisions must be corrected by the Contractor. After resubmittal they will be reviewed and returned to him by the Engineer. If returned marked, "No exceptions noted" or "Exceptions as noted", then the Contractor may begin this work. Any corrections made to the shop drawings are to be followed without exception.

G. The Contractor shall submit to the Engineer all shop drawings and data sufficiently in advance of construction requirements. The Engineer's review period shall be as specified in Subparagraph 6.17 of the General Conditions.

H. The Contractor shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of work prior to review by the Engineer of the necessary shop drawings.

I. All shop drawings, product data, working drawings and samples submitted by subcontractors for review shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission according to the

approved shop drawing schedule so as to prevent delays in delivery of materials and project completion.

J. The Contractor shall check all subcontractor's shop drawings, product data, working drawings and samples regarding measurements, size of members, materials, and details to satisfy himself that they are in conformance to the Contract Documents. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission to the Engineer.

1.8 ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A. The Engineer's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the Contractor from compliance with the Contract Drawings and Specifications or from departures therefrom. The Contractor remains responsi- ble for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

B. The Contractor’s schedule shall allow for 15 working days for the Engineer’s review of each submittal.

C. The review of shop drawings, data, and samples will be general. They shall not be construed:

1. As permitting any departure from the Contract requirements;

2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.

D. If the shop drawings, data or samples as submitted describe variations per subparagraph (1.07H),and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

E. Submittals will be returned to the Contractor under one of the following:

"NO EXCEPTIONS NOTED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the

equipment and/or material for manufacture.

"EXCEPTIONS AS NOTED" is assigned when notations or comments have been made on the submittal pointing out minor discrepancies as compared with the Contract Documents. Resubmittal or confirmation is not necessary prior to release for manufacturing.

"EXCEPTIONS AS NOTED/CONFIRM." This combination of codes is assigned when a confirmation of the notations and comments is required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation is to address the omissions and/or nonconforming items that were noted. Only the items to be "confirmed" need to be resubmitted.

"EXCEPTIONS AS NOTED/RESUBMIT." This combination of codes is assigned when a resubmittal is required by the Contractor. The Contractor may release a portion of the equipment or material for manufacture; however, all notations and comments must be incorporated into the final submittal. This resubmittal is to address the omissions and/or nonconforming items that were noted.

"REJECTED. REVISE AS INDICATED AND RESUBMIT." This combination of codes is assigned when the submittal is in noncompliance with the Contract Documents and must be corrected and the entire package resubmitted. This code generally means that the equipment or material cannot be released for manufacture unless the Contractor takes full responsibility for providing the submitted items in accordance with Contract Documents.

"FOR YOUR INFORMATION" is assigned when the package provides information of a general nature that may or may not require a response.

F. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to anywork done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.

G. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer within 10 days of the receiving the corrections.

H. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

I. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

J. It is considered reasonable that the Contractor shall provide complete and accurate submittals and responses to the Engineer's comments. Accordingly, allowance is made for two reviews of each submittal (initial submittal plus one re-submittal to respond to the Engineer's comments). The Owner shall withhold $500 from the Contractor's payments for each 3rd and subsequent reviews of each submittal to compensate the Engineer for the additional reviews.

PART 2 - PRODUCTS

(Not Used) PART 3 -

EXECUTION (Not Used)

Preliminary List of Contractor's Submittal Packages

1	Emergency Contacts and Misc.
2	Hurricane Preparedness Plan
3	Construction Phasing Plan
4	CPM Schedule
5	Schedule of Values
6	Pre-Construction Video
7	Maintenance of Traffic
8	Project Signs
9	Dewatering Plan
10	Erosion Control
11	Flowable Fill
12	Asphalt Restoration Materials
13	Concrete
14	PVC Pipe and Fittings
15	HDPE Pipe
16	Water Services
17	Valves and Appurtenances
18	Tapping Sleeves
19	Fire Hydrants
20	Meter Assemblies
21	Concrete Manholes
22	RCP Pipe
23	Sod

END OF SECTION

SECTION 01385

COLOR AUDIO-VIDEO CONSTRUCTION RECORDS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Audio-Video recording of all work areas, including private properties, in the Contract will be prepared by the Contractor. The video recording shall be in DVD format.

B. Mobilization will not be permitted to commence until the audio-video recordings are submitted and approved.

C. The Contractor shall have a continuous color audio-video recording taken along the entire length of the Project including all affected project areas. Streets, easements, rights-of-way, lots or construction sites within the Project must be recorded to serve as a record of the pre-construction conditions. One copy of the recording and video log shall be submitted to the Owner and one copy to the Engineer. The Engineer shall designate those areas, if any, to be omitted from or added to the audio-visual coverage. All recordings and written records shall become property of the Owner.

D. No construction shall begin prior to review and approval of the recordings covering the Project construction area(s) by the Owner. The Owner shall have the authority to reject all or any portion of a recording not conforming to specifications and order that it be re-recorded at no additional charge. The Contractor shall reschedule unacceptable coverage within seven (7) days after being notified.

E. The Contractor shall engage the services of a professional videographer known to be skilled and regularly engaged in the business of pre-construction color audio-video documentation.

F. Each recording shall begin with the current date, project name and the general location. Accompanying the video recording shall be a corresponding and simultaneously recorded audio recording. This audio recording, exclusively containing commentary of the camera operator of an aide, shall assist in viewer orientation and in any needed identification, differentiation, clarification, or objective description of the features being shown in the video portion of the recording. The audio recording shall also be free from any conversations.

G. All video recordings must continuously display transparent digital information to include the date and time of recording. The date information shall contain the month, day and year. The time information shall contain the hour, minute and seconds. Additional information shall be displayed periodically. Such information shall

include, but not be limited to, project name, project number and direction of travel.

H. All recording shall be done during time of good visibility. No recording shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.

I. The average rate of travel during a particular segment of coverage shall be directly proportional to the number, size and value of the surface features within the construction areas zone of influence. The rate of speed in the general direction of travel of the vehicle used during recording shall not exceed 44 feet per minute.

J. Video Log/ Index – All DVDs shall be permanently labeled and shall be properly identified by number and project title. Each recording shall have a log of its content. The log shall describe the various segments of coverage contained in terms of street names or location of easements; coverage beginning and end; directions of coverage; video unit counter numbers, engineering survey or coordinate values and the date.

K. Recording coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, drainage system features, mailboxes, landscaping, culverts, fences, signs, etc. within the area covered by the project. Of particular concern shall be the existence of any faults, fractures, or defects. Recorded coverage shall be limited to one side of the site, street, easement of right-of-way at any one time.

L. The cost to complete the requirements under this section shall be included in the contract items provided in the proposal sheet. There is no separate pay item for this work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall employ and pay for the services of an Independent Testing Laboratory to perform all geotechnical materials testing including but not limited to compaction density testing as indicated in the Contract Documents or described in the Specifications.

1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.

2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the work of the Contract.

3. The Owner or Engineer may elect to have additional materials and equipment tested for conformity with the Contract Documents.

B. All laboratories used by the Contractor are subject to the Owner’s approval.

C. The Contractor shall provide a map of the project area, showing the location of all tests. Using an overall project drawing sheet for this purpose is acceptable.

1.2 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.

2. Approve or accept any portion of the Work.

3. Perform any duties of the Contractor.

1.3 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel and provide access to work.

B. Secure and deliver to the laboratory, adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory, the preliminary design mix proposed to be used for

concrete, asphalt and other materials mixes which require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiaryobligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.

E. Furnish incidental labor andfacilities:

1. To provide access to work to be tested.

2. To obtain and handle samples at the Project site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

F. Notify laboratory sufficiently in advance (minimum 48 hours) of operations to allow for laboratory assignment of personnel and scheduling of tests.

G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the Contractor's convenience and as approved by the Engineer.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 TESTING REQUIREMENTS

A. Testing shall be conducted in accordance with the following Table. The Owner and Engineer reserve the right to require additional tests.

B. Lab technician shall notify the Contractor, the Owner’s Representative and the Engineer upon failing results. Work shall not continue in a given area until passing results are obtained.

C. The Owner, Owner's Representative and the Engineer shall be provided with copies of all test reports.

MATERIAL TESTING TABLE

ITEM	TEST	TEST IDENTIFICATION	TEST REQUIREMENTS VERTICAL	TEST FREQUENCY HORIZONTAL
UTILITY TRENCH BACKFILL	MAXIMUM DENSITY OPTIMUM MOISTURE FIELD DENSITY	AASHTO T-180 AASHTO T-180	PER SOIL CLASSIFICATION/ PER LABORATORY PER PLANS	PER SOIL CLASSIFICATION/ PER LABORATORY ONE PER 200 LF
SUBGRADE UNCLEAR NEW CURB	MAXIMUM DENSITY OPTIMUM MOISTURE LBR	AASHTO T-180 FM 5-515 AASHTO T-180	N/A PER PLANS	PER SOIL CLASSIFICATION/ PER LABORATORY ONE PER 1320 LF AND IN EACH ISOLATED
LIMEROCK/ SHELL BASE	MAXIMUM DENSITY OPTIMUM MOISTURE LBR FIELD THICKNESS FIELD DENSITY	AASHTO T-180 FM 5-515 AASHTO T-180	N/A N/A FULL BASE THICKNESS PER PLANS	PER SOIL CLASSIFICATION/ PER LABORATORY THREE PER SOURCE ONE PER 200 LF AND IN EACH ISOLATED AREA ONE PER 200 LF AND IN EACH ISOLATED

ITEM	TEST	TEST IDENTIFICATION	TEST REQUIREMENTS VERTICAL	TEST FREQUENCY HORIZONTAL
SOIL CEMENT BASE	SOIL CEMENT PLACEMENT/ MONITORING DENSITIES THICKNESS DETERMINATIONS	AASHTO T- 134 AND AASHTO T-135	PER PLANS	ONE PER 200 LF
CONCRETE	COMPRESSIVE STRENGTH (THREE CYLINDERS/TEST) SLUMP, AIR CONTENT	AASHTO T-23 AND AASHTO T-119 AASHTO T-22	PER SPECS PER SPECS	PER SPECS/MIN. OF ONE SET/DAY FOR POURS BETWEEN 10 & 50 CY, ADDITIONAL SET FOR EACH 50 CY DAILY OR 1 PER 50 CY MAX
ASPHALT	MATERIAL QUALITY: GRADATION ASHPALT CONTENT SPECIFIC GRAVITY TEMPERATURE FIELD THICKNESS AND FIELD DENSITY	FM 1-T 030 FM 5-563 FM 1-T 209 FM 1-T 166	N/A CORE SAMPLE THROUGH FULL THICKNESS OF WEARING COURSE	DAILY OR 1 PER 250 CY (500 TONS) PER TRUCK DELIVERED ONE CORE PER 500 LF AND IN EACH ISOLATED AREA OF WORK
RECYCLED CONCRETE BASE	GRADATION DENSITIES THICKNESS DETERMINATIONS	AASHTO T-180	PER SPECS	PER SOIL CLASSIFICATION PER LABORATORY

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 SANITARY FACILITIES

A. Contractor shall furnish temporarysanitary facilities at the site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.

B. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

1.2 PARKING

A. Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with the Project, as required to avoid any need for parking personal vehicles where they may interfere with public traffic, Owner's operations, or construction activities.

1.3 DUST CONTROL

A. Contractor shall take reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by application of an approved chemical dust suppressant. Dusty materials in piles or in transit shall be covered when practicable to prevent blowing.

B. Buildings or operating facilities that may be adversely affected by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels or similar equipment, shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.4 SWEEPING

A. The Contractor shall sweep loose material from all pavements at the end of each workday.

1.5 POLLUTION CONTROL

A. Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris or other substance will be permitted to enter sanitarysewers and reasonable measures will be taken to prevent such materials form entering any drain or watercourse.

1.6 COMBUSTABLES STORAGE

The Contractor shall protect all combustible products and materials placed on site from vehicular damage and vandalism.

Contractor shall submit a plan for all locations of fuel and vehicle storage through the duration of the project, updated as necessary to address specific phases or locations of the work.

There shall be no fuel storage in wetland areas.

Fuel storage containers shall be limited to 549 gallons or less. The Contractor is solely responsible for maintaining fuel containers and ensuring that all measures for protection and containment are provided as required by law.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Furnish, install and maintain temporary utilities required for construction, remove on completion of Work.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code.

B. Comply with Federal, State and local codes and regulations and with utility company requirements.

C. Comply with regulations of Health Department of the municipalities.

PART 2 – PRODUCTS

2.1 MATERIALS, GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.2 TEMPORARY ELECTRICITY AND LIGHTING

A. Arrange with utility company and Owner to provide service required for power and lighting, and pay all costs for service and for power used in the construction, testing and trial operation prior to final acceptance of the work by the Owner as stipulated by the Engineer. All cost associated with obtaining temporary and permanent power will be at Contractor expense.

B. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

2.3 TEMPORARY WATER

A. If applicable, establish an account and install at each and every connection to the Owner'swatersupply a backflow preventer and meter meeting local requirements. This does not include water for testing which will be provided by the Owner free

of charge.

B. The Contractor shall include in its bid any cost(s) anticipated for the use of temporary water facilities as a part of the construction of this project.

2.4 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities in compliance with laws and regulations.

B. Service, clean and maintain facilities and enclosures.

PART 3 - EXECUTION

3.1 GENERAL

A. Maintain and operate systems to assure continuous service.

B. Modify and extend systems as work progress requires.

C. Allow the Owner, Owner's Representative and Engineer reasonable use of all temporary utilities.

3.2 REMOVAL

A. Completely remove temporary materials and equipment when their use is no longer required as determined by the Owner's Representative or Engineer, but not before achieving Substantial Completion.

B. Clean and repair damage caused by temporary installations or use of temporary facilities.

END OF SECTION

SECTION 01530

PROTECTION OF EXISTING FACILITIES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. The Contractor shall protect all existing utilities, facilities, and improvements not designated for removal and restore damaged or temporarily located utilities, facilities, and improvements to a condition equal to or better than they were prior to such damage or temporary relocation in accordance with the requirements of the Contract Documents.

B. The number of exploratory excavations required shall be that number sufficient to determine the alignment and depth of the existing utility or facility.

C. The Contractor shall determine the exact locations and depths of all existing utilities indicated on the Drawings that affect the Work. In addition to those indicated, the Contractor shall make exploratory excavations of all utilities. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's Work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 RIGHTS-OF-WAY

A. The Contractor shall not do any Work that would affect any utility; any fence; or any other structure, nor shall the Contractor enter upon the rights-of-way or easements involved with any such utilities until the Contractor has secured authority therefore from the utility, rights-of-way or easement owner, and has provided the Engineer with written proof of same. After authority has been obtained, the Contractor shall give said facility owner a minimum of one week’s notice of the Contractor's intention to begin Work and shall give said facility owner convenient access for removing, shoring, supporting, or otherwise protecting its utility, fence, or structure and for replacing same. Should two (2) or more contracts be executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the Owner shall decide which Contractor shall have priority to perform and in what manner. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Owner to the Contractor so desiring, to the extent, amount, manner, and times

permitted by the Owner. No such decision as to the method or time of conducting the Work or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the Work.

3.2 PROTECTION OF STREET OR ROADWAY MARKERS

A. The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers, or other existing street or roadway markers, without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that may be disturbed by the construction operations have been properly referenced for easy and accurate restoration. It shall be the Contractor's responsibility to notify the proper representatives of the Owner of the time and location that work will be done. Such notice shall be sufficiently in advance of construction that there shall be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or points disturbed without proper authorization by the Engineer will be accurately restored by the Contractor at no additional cost to the Owner after all street or roadway resurfacing has been completed.

3.3 RESTORATION OF PAVEMENT

A. General: All paved areas, including asphaltic concrete cut or damaged during construction, shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavements shall conform to the requirements of the affected pavement owner. All pavement subject to partial removal shall be neatly saw cut in straight lines. All restoration shall be performed in accordance with these Specifications.

B. Temporary Resurfacing: Wherever required by the authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements. Temporary resurfacing shall be constructed in accordance with these Specifications.

C. Permanent Resurfacing: All pavement restoration shall be in accordance with these Specifications.

3.4 EXISTING UTILITIES AND IMPROVEMENTS

A. General: The Contractor shall protect all utilities and other improvements that may be impaired during construction operations. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements indicated on the Drawings that may be encountered during construction, and to assure that such utilities or other improvements are adequately

protected from damage due to such operations. The Contractor shall take all possible precautions for the protection of unforeseen utility lines, for uninterrupted utility service and such special protection as may be directed by the Owner.

B. Utilities To Be Moved: If it becomes necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon proper application by the Contractor, be notified by the Owner to relocate such property within a specified reasonable time. The Contractor shall not interfere with said property until it has been relocated by the utility or franchise holder.

C. Owner's Right of Access: The right is reserved by the Owner, and by the owners of public utilities and franchises, to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work.

D. Known Utilities: Existing utility lines that are shown on the Drawings or the locations of which are made known to the Contractor prior to excavation that are to be retained and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired by the Contractor at no additional cost to the Owner.

E. Unknown Utilities: If the Contractor damages any existing utility lines that are not shown on the Drawings or the locations of which are not made known to Contractor prior to excavation, or were not, or could not have been verified or located by the Contractor prior to starting the Work, a written report thereof shall be made immediately to the Owner. If directed by the Owner, repairs shall be made by the Contractor under the provisions ofthe Contract Documents.

F. Utilities To Be Removed: When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the utility owner and the Owner a sufficient time in advance for the necessary measures to be taken to prevent interruptions of the service.

G. Approval Of Repairs: All repairs to a damaged improvement facility shall be inspected and approved by an authorized representative of the improvement's Owner before being concealed by backfill or other Work.

H. Relocation of Utilities: Where the proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility, or other improvement that is shown on the Drawings, the Contractor shall, at Contractor's own expense, remove, and without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the Owner and the owner of the facility. In all cases of such temporary removal or relocation, restoration to the former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former location and to as good or better condition as prior to removal.

I. Maintaining Service: All utilities encountered along the line of the Work shall be maintained continuously in service during all the operations, unless other arrangements satisfactory to the Engineer are made with the owner of said utility. The Contractor shall be responsible for and shall make good all damage due to Contractor's operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

3.5 TREES WITHIN RIGHTS-OF-WAY AND PROJECT LIMITS

A. General: The Contractor shall exercise all necessary precautions to prevent damage or destruction of any trees or shrubs, including those lying within street rights-of-way and Project limits. The Contractor shall not trim or remove any trees unless such trees have been approved for trimming or removal by all jurisdictional agencies and the Owner. All existing trees and shrubs that are damaged during construction shall be trimmed or replaced by Contractor under permit from the jurisdictional agencies and the Owner and to the satisfaction of said agencies and the Owner. Tree trimming, tree planting and transplanting shall be accomplished in accordance with these specifications.

3.6 NOTIFICATION BY THE CONTRACTOR

A. Prior to any excavation in the vicinity of any existing underground facilities; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way, the Contractor shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than three (3) working days nor more than five (5) working days prior to excavation so that representatives of said owners or agencies can be present during such work if they so desire.

3.7 SUBSURFACE OBSTRUCTIONS

A. The Contractor shall field determine, before pipeline trenching, drilling or any other excavations are begun, the depth and location of existing utilities. Utility locations indicated on the Drawings are shown based on available data. The Contractor shall submit descriptions, depths, and locations of subsurface obstructions to the Engineer for review if they differ from those shown on the Drawings.

B. In installing pipe, care shall be taken not to remove, disturb, or damage existing pipes, conduits, or structures. If necessary, the Contractor shall sling, shore-up, and maintain such structures in operation at no additional cost to the Owner.

C. The Contractor shall obtain the permission of and give sufficient Notice to the proper authorities of the Contractor's intention to remove or disturb any pipe, conduit, structure or facility, and shall abide by their requirements and Laws and Regulations governing such work.

D. In the event subsurface structures are broken or damaged in the execution of the Work, the Contractor shall immediately notify the proper authorities and, at the option of said authorities, either repair the damage at once or pay the proper charges for repairing said damage at no additional cost to the Owner. Repairs shall be made to the satisfaction of the Engineer. The Contractor shall be responsible for any damage to persons or property caused by such breaks or due to the neglect in reporting and/or repairing such damages.

E. Neither the Owner nor the Engineer will be liable for any claims made by the Contractor based on underground obstructions that could have been reasonably identified as being different than that indicated on the Drawings. The Contractor shall uncover subsurface obstructions in advance of construction so that the method of avoiding same may be determined before the Work reaches the obstruction.

3.8 CONFLICTS WITH OTHER UTILITIES

A. It shall be the Contractor's responsibility to provide the appropriate utility company sufficient advance notice so their representatives may verify the utility location on the Project site when construction begins. The Contractor shall coordinate and cooperate with these utilities to ensure that no damages occur which maycause interruption of their services.

B. All temporary support or minor adjustment that does not require replacement or direct by-pass connections to these existing services (such as all direct-buried telephone cables or two-inch and smaller gas lines) shall be the responsibility of the Contractor.

C. Where it may be necessary to relocate gas mains or telephone ducts (defined here as gas lines larger than 2-1/2 inches and telephone cables within ductwork) to allow construction of the Work or where major relocation of small services requires replacement or performing connections to the existing lines, all such relocation work is the responsibility of and must be performed by the respective utility companies. The Contractor shall immediately provide Notice to the proper utility company and the Engineer of the occurrence and location of such required relocations.

D. The Owner will not be responsible for any delay or inconvenience to the Contractor resulting from the existence, removal, or adjustment of any public or private utility that could have been reasonably identified. Additional costs incurred as a result thereof shall be borne by the Contractor and considered as included in the price bid for the various pay items.

E. Relocation or realignment of storm drains or sewer lines that may interfere with the construction of the Work shall be the responsibility of the Contractor.

F. Where storm drains or sewer lines are removed by the Contractor to facilitate construction and replaced in their original position, there shall be no direct payment made. All related costs shall be included in the price bid for the various payitems.

3.9 POLE RELOCATION AND PROTECTION

A. The Contractor shall take notice of the number of power, telephone, and traffic signal support poles along the length of the Project. Several may be in proximity to or in direct conflict with the alignment of the proposed new pipelines. The Contractor shall immediately provide Notice to the proper utility company and the Engineer of the occurrence and location of such required relocations. It is intended that poles shall be supported with mud jacks or by other means of bracing as required to maintain them in a stable condition. The Contractor shall coordinate relocation and protection activities with the poleowner.

3.10 EXISTING FENCE LINES

A. At various locations along the length of the Project, existing fences may conflict with or impair construction operations for the installation of the Work. The Contractor shall protect these fences in places where they do not conflict with construction operations. Where a fence may conflict with the backswing of machinery or otherwise impede construction, the Contractor shall contact the owner and arrange for the temporary removal or relocation of the fence. Any fence temporarily relocated shall be placed in a manner to maintain the intent and integrity of the original fenced area. Any fence removed or temporarily relocated shall be restored to its original condition and location unless otherwise arranged with the owner of the fence. Where it is impossible to salvage the existing materials to reconstruct the fence, the fence shall be replaced "in kind."

B. All cost for such temporary removal, temporary replacement, or "in kind" replacement shall be included in the price bid for the various pay items. No direct payment shall be made for fence replacement.

3.11 UTILITY INVESTIGATION

A. Prior to commencing with trench or other excavations required for the performance of the Work, the Contractor shall conduct a field investigation for the purpose of determining existing locations of all underground utilities and facilities which are shown on the Drawings. The Contractor shall coordinate all utility investigations with Sunshine. The investigation shall be made by hand or machine excavation. All such excavations shall include removal of surface material and obstructions required to perform the excavations. The Contractor shall notify, in writing, the owner of the facility to be excavated and request that a representative of the owner be present during the excavation. The Contractor shall provide the utility owner adequate Notice so that a representative can be

there. The Contractor shall provide sheeting, shoring, and bracing as required to minimize the required size of the excavation and support adjacent ground, structures, roadways, and utilities. After the data is obtained at each excavation site, the Contractor shall immediately backfill each excavation site. Backfill shall be compacted sand for the full depth. The surface shall be returned to its original grade and condition except that paved areas may be temporarily surfaced and maintained where excavations required for the performance of the Work coincide with the location of the investigative location. The Contractor shall be responsible for all costs associated with the repair of roadways, paving, structures, underground and above ground utilities and facilities damaged in conductingthe investigations.

B. Findings of the investigation shall be reported to the Engineer. The Engineer will furnish one (1) set of full-size Drawings for the Contractor's field use in recording the findings of the investigation. The Contractor shall describe the size, material, and location of existing underground utilities and facilities. Locations and elevations shall be referenced to Project stationing, distance from base line, and Project bench marks. The Contractor shall provide written detailed description of any underground utility or facility conflicting with the elevation or alignment of the Work.

3.12 SPECIAL RESTORATION REQUIREMENTS

A. The Contractor shall schedule and conduct operations to minimize the impact of construction upon lawns, driveways, sidewalks, irrigation systems, and street paving. Restoration for these items shall be completed as soon as practical after installation of proposed pipelines. The following specific requirements apply.

1. Driveways and Sidewalks: The Contractor shall cut existing driveway or sidewalk pavement and remove the required section not sooner than the same day the Work is to be installed beneath it. The Contractor shall maintain full access to each driveway at all times. The Contractor shall re-grade and compact disturbed areas immediately after the Work is installed. The Contractor shall provide suitable, safe, temporary walking surfaces where the sidewalk is removed. The Contractor shall construct temporary driveway or sidewalk section within 24 hours of removal of the existing section. The Contractor shall coordinate driveway construction and restoration with property owners. Property owners shall be provided with Notice of proposed method and schedule of construction and restoration a minimum of 72 hours prior to commencement of construction activities affecting the property owner's driveways or sidewalks.

2. Irrigation Systems: The Contractor shall provide 10-day Notice to property owners prior to the Contractor removing irrigation system components.

3. Lawn Areas: The Contractor shall remove existing grass along a straight line to a minimum distance of six inches beyond the areas disturbed by construction activities on each side of the affected area. Sod shall be installed in disturbed lawn areas in a strip of uniform width along each section of lawn area with sod of identical type as existing. The Contractor shall grade and compact the area before the end of the next calendar day after excavation is performed. All sodding shall be performed in accordance with these Specifications. The Contractor shall install new sod within fourteen days after excavation.

4. Trees, Shrubs, and Landscaping: The Contractor shall use a bonded company, licensed to perform landscape work, to perform all landscaping work required in accordance with these Specifications.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall be responsible for providing safe and expeditious movement of traffic through construction zones. A construction zone is defined as the immediate areas of actual construction and all abutting areas which are used by the Contractor and which interfere with the driving or walking public.

B. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.

1.2 TRAFFIC CONTROL

A. The necessary precautions shall include, but not be limited to, such items as proper construction warning signs, variable message boards, signals, lighting devices, markings, barricades, channelization and hand signaling devices. The Contractor shall be responsible for installation and maintenance of all devices and requirements for the duration of the construction period.

B. The Contractor shall provide at least 72 hours notification, along with a proposed Maintenance of Traffic Plan for review, to the Owner and applicable County or State Highway Department of the necessity to close any portion of a roadway carrying vehicles or pedestrians. 72 hour notification is required to allow for review of the proposed Maintenance of Traffic Plan and to allow the Owner's Public Information Officer adequate time to post notices to the public.

C. The Contractor shall be responsible for removal, relocation, or replacement of any traffic control device in the construction area which exists as part of the normal pre-construction traffic control scheme. Any such actions shall be performed by the Contractor under the supervision, and in accordance with the Specifications, of the Owner, unless otherwise specified.

E. The Contractor shall immediately notify the Owner of any vehicular or pedestrian safety or efficiency problems incurred as a result of the construction of the project.

1.3 MAINTENANCE OF TRAFFIC

A. The Contractor shall maintain traffic within the construction area throughout the duration of the construction in accordance with Section 102 of the Florida Department of Transportation (FDOT) "Standard Specifications for Road and Bridge Construction," latest edition (the Standard Specifications) except as may be modified herein. References to "Department" shall mean "City of Venice" and Sections 102-11

"Method of Measurement," 102-12 "Submittals," and 102-13 "Basis of Payment" do not apply and are replaced by the measurement and payment requirements of Section 01150 of this contract.

B. Roadways shall be kept open to one-way traffic in each direction during all phases of the construction period except that daylight lane closures with flagger control will be allowed. The Contractor will not be permitted to isolate residences or places of business. Alternate access shall be provided to all residences and all places of business whenever construction interferes with the existing access.

C. The Contractor shall maintain access at all times for the Owner, postal delivery, emergency services and trash pickup. The Owner, postal service, police department, fire department and solid waste services shall be notified of the need to temporarily close any roadway and an alternate means of access to affected properties shall be provided.

D. The Contractor shall conduct his operations in such a manner that will maintain access to private property/driveways and will result in minimum inconvenience to the public accessing the neighborhood roads and/or business establishments and shall provide temporary access duringconstruction.

E. In the event that vehicular access to residences and/or driveways will be temporarily blocked, the Contractor shall notifythe Owner three (3) days in advance and shall assist the Owner with coordinating with affected residents. Blocking vehicular access to any residence shall not exceed one calendar day.

F. The Contractor shall furnish, erect and maintain all necessary traffic control and safety devices in accordance with the Florida Department of Transportation (FDOT) Index 600 series of "Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System," latest edition, and shall take all necessary precautions for the protection of the work and the safety of the public for the duration of the construction period.

G. The work shall include the furnishing, erection, maintenance and removal upon completion of construction, all temporary traffic barricades of whatever type required, and for such duration as may be required by the Owner, Owner's Representative or Engineer. Also included as part of the work is material and construction necessary for temporary connections, sidewalk maintenance and driveway maintenance.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

Material and equipment incorporated into the Work:

1. Shall conform to applicable specifications and standards.

2. Shall comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.

3. Manufactured and Fabricated Products:

   a. Design, fabricate and assemble in accord with the best engineering and shop practices.

   b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.

   c. Two or more items of the same kind shall be identical, by the same manufacturer.

   d. Products shall be suitable for service conditions.

   e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.2 APPROVAL OF MATERIALS

A. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the work site without prior review of the Engineer.

B. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during the progress of the work, the Contractor shall submit samples of materials for special tests above and beyond those required by the Specifications, to demonstrate that the samples conform to the specifications. Such samples shall be furnished,

stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for the tests unless the samples are found to not be in conformance with the specifications, in which case the Contractor shall pay for the tests.

C. The Contractor shall submit data and samples sufficiently early to permit consideration and review before materials are necessary for incorporation in the work. Any delay resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claims against the Owner or the Engineer.

D. The materials and equipment used on the work shall correspond to the approved samples or other data previously submitted to the Engineer for review.

1.3 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including four copies to the Engineer.

1. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.

2. Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.4 TRANSPORTATION AND HANDLING

A. Arrange deliveries of Products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.

1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that Products are properly protected and undamaged.

B. Provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

1.5 STORAGE AND PROTECTION

A. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry, noncorrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this project. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment, etc. The Contractor shall furnish a copy of the manufacturer's instructions for storage to the Engineer prior to storage of all equipment and materials. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a paymentestimate.

B. Store Products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weathertight enclosures.

2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

3. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.

4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. All materials and equipment to be incorporated in the work shall be handled and stored by the Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.

D. Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All miscellaneous steel, and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Precast concrete sections shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spilling to a minimum.

E. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.

F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specified conditions, and free from damage or deterioration.

G. Protection After Installation:

1. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.

H. The Contractor shall be responsible for all material, equipment, and supplies sold and delivered to the Owner under this Contract until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.

I. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessarycorrections.

1.6 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Contractor's Options:

1. For Products specified only by reference standard, select any product meeting that standard.

2. For Products specified by naming several Products or manufacturers, submit the Products or manufacturers named in the Contractors Bid, which complies with the specifications.

3. For Products specified by naming one or more Products or more products or manufacturers and "or equal", Contractor must submit a request as for substitutions for any Product or manufacturer not specifically named.

4. “Or Equal” items will be reviewed as part of the submittal process. Requests for approval of substitutions shall be submitted within 30 days of the effective date of the Agreement.

1.7 SPECIAL TOOLS

A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. The Contractor shall preserve and deliver to the Owner these tools and instructions in good order no later than upon completion of the Contract.

1.8 WARRANTY

A. For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified in Section 01030. The manufacturer's warranty period shall be concurrent with the Contractor's for twelve (12) months after the time of completion and acceptance.

1.9 SPARE PARTS

A. Spare parts for certain equipment have been specified in the pertinent sections of the Specifications. The Contractor shall collect and store all spare parts so required in an area to be designated by the Engineer. In addition, the Contractor shall furnish to the Engineer an inventorylisting all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventoryto substantiate the deliveredcost.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

Comply with requirements stated in General Conditions and in Specifications for administrative procedures in closing out the Work.

1.2 SUBSTANTIAL COMPLETION

A. The project will be considered to be Substantially Complete when:
   1. All new water mains are installed, cleared, placed into service and tied in.
   2. All new water services are installed and active, including all work on private property.
   3. All existing water mains and services to be abandoned are taken out of service and disconnected from mains remaining in service.
   4. All new gravity sewer mains and manholes are installed, cleared, placed into service, and tied in.
   5. All new sanitary sewer laterals are installed and active, including all work on private property.
   6. All existing gravity sewer and laterals to be abandoned are taken out of service and disconnected from gravity sewers remaining in service.
   7. All new storm sewer mains and manholes are installed, cleared, placed into service, and tied in.
   8. All existing storm sewer to be removed is disconnected from storm sewers remaining in service.
   9. All restoration, including restoration on private property and final pavement restoration but not including restoration associated with grouting mains taken out of service, is completed.

B. When Contractor considers the Work is substantially complete, he shall submit to the Owner:
   1. A written notice that the Work, or designated portion thereof, is substantially complete.

   2. A list of items to be completed or corrected.

   3. A copy of all applicable, executed:

      - Manufacturer Certifications of Proper testing, Ready for Operation and Completion
      - Calibration and Testing Certificates
      - Transmittals of Operations and Maintenance Manuals

- Transmittals of Spare Parts
- Owner's Equipment Training Attendance Sign-in sheets
- Warranties and guarantees of the manufacturer(s).

C. Within a reasonable time after receipt of such notice, the Owner, Owner's Representative and/or Engineer will make an inspection to determine the status of completion.

D. Should the Owner, Owner's Representative and/or Engineer determine that the Work is not Substantially complete:

1. The Owner, Owner's Representative and/or Engineer will promptly notify the Contractor, in writing, giving the reasons therefore.

2. Contractor shall remedy the deficiencies in the Work and send a second written notice of substantial completion to the Owner.

3. The Owner, Owner's Representative and/or Engineer will re-inspect the Work.

E. When the Owner, Owner's Representative and/or Engineer find that the Work is Substantially Complete, they will:

1. Prepare and deliver to Owner a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final completion.

2. After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when the Owner, Owner's Representative and/or Engineer consider the Work Substantially Complete, the Contractor will be provided with a Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.3 FINAL INSPECTION

A. When Contractor considers the Work to be complete, he shall submit written certification that:

1. Contract Documents have been reviewed.

2. Work has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the Owner's Representative and are operational.

5. Work is completed and ready for final inspection.

B. The Owner, Owner's Representative and/or Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the Work be found to be incomplete or defective:

1. The Contractor will be notified in writing, listing the incomplete or defective work.

2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Owner that the Work is complete.

3. The Owner, Owner's Representative and/or Engineer will re-inspect the Work.

D. When the Owner, Owner's Representative and/or Engineer find that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeoutsubmittals.

1.4 REINSPECTION FEES

A. Should the Engineer or Owner's Representative perform re-inspections, due to failure of the Work, to comply with the claims of status of completion made by the Contractor:

1. Owner will compensate the Engineer for such additional services.

2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.5 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Evidence of compliance with requirements of governing authorities.

B. Project Record Documents and As-built Drawings.

C. Operating and Maintenance Data, Instructions to Owner's Personnel.

D. Warranties and Bonds.

E. Keys and Keying Schedule.

F. Spare Parts and Maintenance Materials.

G. Evidence of Payment and Release of Liens.

H. Certificate of Insurance for Products and Completed Operations.

I. Contractor's Final Affidavit.

J. Lien Waivers from Subcontractors and Suppliers.

K. Consent of Surety from the bonding company.

L. Contractor's Guarantee.

1.6 FINAL ADJUSTMENT OF ACCOUNTS

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

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

a. Previous Change Orders.

b. Unit Prices.

c. Deductions for uncorrected Work.

d. Penalties and Bonuses.

e. Deductions for liquidated damages.

f. Deductions for re-inspection payments.

g. Other adjustments.

3. Total Contract Sum, as adjusted.

4. Previous payments.

5. Sum remaining due.

C. Engineer will prepare a final Change Order, reflecting approved adjustments to the Contract Price, which were not previously made by Change Orders.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 02010

MOBILIZATION AND SITE WORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Work included in this section includes all work necessary to transport all materials, equipment, personnel and prepare sites for all pipe installation, roadway improvements and stormwater improvements including but not limited to providing access and temporary facilities, as needed.

PART 2 - PRODUCTS

2.1 GENERAL

A. The contractor is solely responsible for providing security for all materials stored on-site during the construction activities.

PART 3 - EXECUTION

3.1 GENERAL

A. The contractor shall provide 10 days notification to the engineer and City Project Manager prior to initiating mobilization to the site and initiating work. The contractor will also provide proof that all permits have been obtained prior to initiating work.

B. The contractor shall restrict his operations to the designated work area and ensure that construction activities do not disrupt normal operational activities of the City's utility services.

C. The contractor is responsible for visually inspecting the site to note obstructions or access difficulties.

D. The contractor is responsible for maintaining access to the work site to facilitate all construction, inspection and testing activities. Contractor shall provide and install limestone gravel on an as-needed basis, to maintain access for himself, engineer and Owner during the execution of the entire project.

PART 4 - PAYMENT

4.01 GENERAL

A. Payment for all work, materials, equipment and personnel specified in this section will be included in the appropriate lump sum price amount for Mobilization as described in the Measurement and payment section of these documents.

END OF SECTION

SECTION 02050

DEMOLITION AND MODIFICATIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and demolish, modify, remove and dispose of work shown on the Drawings and as specified herein.

B. Demolition, modifications and removals that may be specified under other Sections shall conform to requirements of this Section.

C. Demolition and modifications include:

1. Removal or milling of existing and temporary pavement as shown in the drawings

1.2 SUBMITTALS

A. Submit in accordance with the City's specifications, six (6) copies of proposed demolition schedule prior to the start of work. Include in the schedule the coordination of shutoff and continuation of utility service as required.

1.3 JOB CONDITONS

A. Protection –

1. Execute the demolition and removal work to prevent damage or injury to adjacent structures, curbs, and adjacent physical features that might result from collecting, loading of demolished materials.

2. Closing or obstructing of sidewalks and passageways adjacent to the work by the placement or storage of materials will not be permitted and all operations shall be conducted with a minimum interference to vehicular and pedestrian traffic.

B. Notification –

1. At least 48 hours prior to commencement of a demolition and /or removal work, notify the engineer in writing of proposed schedule therefore.

C. Repairs to Damage –

1. Promptly repair damage caused to adjacent physical features by demolition operations. Repairs shall be made to a condition at least equal to that which existed prior to construction.

1.4 DISPOSAL OF MATERIAL

A. All material and items demolished or removed shall become the contractor's property and must be removed from the site.

PART 2: PRODUCTS (Not Used)

PART 3: EXECUTION

3.1 GENERAL

A. Dispose of all demolition materials, equipment, debris and all other items, off the site and in conformance with all existing applicable laws and regulations.

B. Pollution Controls –

1. Use water sprinkling, temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to dust control.

    a. Do not use water for dust control when it may create hazardous or objectionable conditions such as flooding and pollution.

    b. Return adjacent areas to conditions existing prior to the start of the work.

3.2 STRUCTURAL REMOVALS

A. Remove structures to the lines and grades shown unless otherwise directed by the ENGINEER.

B. All concrete, brick, reinforcement, structural or miscellaneous metals, wire mesh and other items contained in or upon the structure shall be removed and taken from the site, unless otherwise approved by the owner and engineer. Demolished items shall not be used in backfill adjacent to structures or in pipeline trenches.

3.3 CLEAN-UP

A. Remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste and debris of every sort shall be removed and premises shall be left clean, neat, and orderly.

END OF SECTION

SECTION 02110

CLEARING, GRUBBING, AND STRIPPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work included in this Section consists of furnishing all necessary labor, equipment, material and transportation necessary to clear, grub, strip and prepare the project site for construction operations.

B. DEFINITIONS

1. Clearing: Clearing shall consist of removing and disposing of shrubs, brush, limbs, sticks, vegetative growth, trash, and rubbish. Clearing operations shall be conducted in such a manner as to protect trees, shrubs, vegetative growth, fencing, structures, and installations that are not designated for removal, and to provide for the safety of employees and others.

2. Grubbing: Grubbing shall consist of the complete removal of all stumps, roots larger than 1-1/2 inches in diameter, matted roots, brush, timber, logs, and any other organic or metallic debris remaining after clearing which is not suitable for site grading or foundation purposes, resting on, under, or protruding through the surface of the ground to a minimum depth of 18 inches below the subgrade.

3. Stripping: Stripping shall consist of the removal and disposal of all organics, sod, topsoil, grass and grass roots, and other objectionable material remaining after clearing and grubbing from the areas designated to be stripped. Grass and grass roots in areas to be excavated or filled upon shall be stripped to a minimum depth of 4 inches. In areas so designated, topsoil shall be stockpiled and protected until it is placed as specified. Any topsoil remaining after all work is in place, shall be stockpiled on site as shown on the Drawings and/or directed by the Engineer and City Project Manager.

PART 2 - MATERIALS

2.1 GENERAL

A. Trees and Shrubbery: Existing trees, shrubbery, and other vegetative material may not be shown on the Drawings. The Contractor shall inspect the site as to the nature, location, size, and extent of vegetative material to be removed or preserved, as specified herein. The Contractor shall preserve, in place, trees that are not specifically designated

to be removed as shown on the Drawings and/or directed by the Engineer and City Project Manager.

B. Preservation of Trees, Shrubs, and Other Plant Material:

1. All plant materials (trees, shrubbery, and plants) beyond the limits of the Work shall be saved and protected from damage resulting from the Work. No filling, excavating, trenching, or stockpiling of materials will be permitted within the drip line of these plant materials. The drip line is defined as a circle drawn by extending a line vertically to the ground from the outermost branches of a plant or group of plants. To prevent soil compaction within the drip-line area, no equipment will be permitted within this area.

2. When trees are close together, entry into the area within the drip line shall be restricted by fencing. In areas where no fence is erected, the trunks of all trees 2 inches in diameter or greater shall be protected by entirely encircling the trunk with boards extending from ground level to a height of 6 feet, and held securely in place by 12-gauge wire and staples. Tree branches which affect construction operations shall be cut and removed and treated with a tree sealant.

PART 3 - EXECUTION

3.1 GENERAL

A. Disposal of Clearing and Grubbing Debris: Dispose and/or remove all cleared and grubbed material from the work site in accordance that all federal, state, and local laws, codes, and ordinances.

END OF SECTION

SECTION 02140

DEWATERING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work to be performed under this Section shall include furnishing all equipment and labor necessary to remove storm or subsurface waters from excavation areas in accordance with the requirements set forth and as shown on the Drawings.

1.2 QUALITY ASSURANCE

A. The dewatering of any excavation areas and the disposal of the water shall be in strict accordance with the latest revision of federal, state, and local and rules and regulations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DEWATERING

A. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters that may accumulate in the excavation.

B. If subsurface water is encountered, the Contractor shall use suitable equipment to adequately dewater the excavation so that it will be dry for the installation of the pipes and structures. A reflective wellpoint system or dewatering method shall be used, if necessary, to maintain the excavation in a dry condition.

C. Dewatering by trench pumping will not be permitted if migration of fine grained natural material from bottom, side walls or bedding material will occur.

D. In the event that satisfactory dewatering cannot be accomplished due to subsurface conditions or where dewatering could damage existing structures, the Contractor shall obtain the Owner and Engineer's approval of wet trench construction or procedure before commencing construction.

3.2 DISPOSAL

A. Water pumped from the trench or other excavation shall be disposed of in suitable disposal pits within the boundary of the site, locations to be approved by the Owner and Engineer.

B. The Contractor is responsible for acquiring all permits required to discharge the water

and shall protect waterways from turbidity during the operation.

C. In areas where adequate disposal sites are not available, partially backfilled trenches may be used for water disposal only when the Contractor's plan for trench disposal is approved, in writing, by the Owner and Engineer. The Contractor's plan shall include temporary culverts, barricades, and other protective measures to prevent damage to property or injury to any person or persons.

D. No flooding of streets, roadways, driveways or private property will be permitted. Dewatering pump engines shall be equipped with residential-type mufflers. Where practical and feasible, electrical "drops" should be used in lieu of portable generators.

END OF SECTION

SECTION 02150

SHEETING AND SHORING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work included in this section consists of furnishing, installing and removing steel sheeting and shoring.

1.2 RELATED WORK

A. Shop Drawings: Section 01340.

1.3 SUBMITTALS

A. Installation (construction) drawings and supporting structural calculations for sheeting and shoring shall be submitted for the record in accordance with Section 01340, prior to installation. All drawings and calculations shall bear the seal of a professional engineer registered in the State of Florida. The Contractor shall be solely responsible for sheeting and shoring design, installation use and adhered to all safety regulations and requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SHEETING AND SHORING

A. Furnish, place, and maintain sheeting and bracing as may be required to support the sides of excavations, to prevent any movement that could in any way diminish the width of the excavation below that necessary for proper construction, to protect adjacent structures and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel sheet piling, braced wood lagging and soldier beams and/or other appropriate methods. If the Engineer is of the opinion that a sufficient number of supports have not been provided, he may order additional supports at the expense of the Contractor, and compliance with such order shall not relieve or release the Contractor of his responsibilities. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed. Where soil cannot be properly compacted to fill a void lean concrete shall be used as backfill at no additional expense to the Owner.

B. The Contractor shall construct the sheeting outside the neat lines of the foundation unless indicated otherwise to the extent he deems it desirable for this method of operation but not less than 10-feet from the structure. Sheeting shall be plumb and

securely braced and tied in position. Sheeting and bracing shall be adequate to withstand all pressure to which the structure or trench will be subjected. Any movement or bulging that may occur shall be corrected by the Contractor at his own expense to provide the necessary clearances and dimensions.

C. Where sheeting and bracing is required, the Contractor shall engage a Professional Engineer, registered in the State of Florida, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design, and certification of this shall be provided by the Professional Engineer.

D. The installation of sheeting, particularly by driving, may cause distress to existing structures. The Contractor shall evaluate the potential for such distress and, if necessary, take all precautions to prevent distress of existing structures because of sheeting installation.

E. The Contractor shall leave in place (to be embedded in the backfill) all sheeting and bracing which the Engineer may direct at any time during the progress of the work, for the purpose of preventing injury to structures, utilities, or property. The Engineer may direct that timber used for sheeting and bracing be cut off at any specified elevation.

F. All sheeting and bracing not left in place shall be carefully removed in such manner as not to endanger the construction or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, or otherwise as may be directed by the Engineer and City Project Manager.

G. The right of the Engineer to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

H. No wood sheeting is to be withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than 1 foot above the top of any pipe, and in no case shall sheeting left in place extend higher than 2 feet below surface grade unless specifically approved.

I. The Contractor shall comply with OSHA requirements as published in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971, under Title 29 - Labor, Chapter XIII - Bureau of Labor Standards, Department of Labor, Part 1518 - Safety and Health Regulations for Construction, Subpart P - Excavations, Trenching, and Shoring, Sections 1518.650 through 1518.653.

END OF SECTION

SECTION 02212

FINISH GRADING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work

1. Finish grade sub-soil.

2. Cut out areas to receive stabilizing base course materials for paving and sidewalks.

3. Place, finish grade and compact topsoil

1.2 PROTECTION

A Prevent damage to existing fencing trees, landscaping, natural features, benchmarks, pavement and utility lines. Correct damage at no cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil: Friable loam free from subsoil, roots, grass, excessive amounts of weeds, stones, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of four (4) percent and a maximum of 25 percent organic matter. Use topsoil stockpiles on site if conforming to these requirements.

PART 3 - EXECUTION

3.1 SUB-SOIL PREPARATION

A. Rough grade sub-soil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots branches, stones, etc. Remove sub-soil that has been contaminated with petroleum products.

B. Cut out areas to sub-grade elevation, which are to receive stabilizing base for paving and sidewalks.

C. Bring sub-soil to required levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.

D. Slope grade away from building minimum two (2) inches in 10 feet unless indicated otherwise on the Drawings.

E. Cultivate sub-grade to a depth of three (3) inches, where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.2 PLACING TOPSOIL

A. Place topsoil in areas where seeding, sodding, and planting are to be performed. Place to the following minimum depths:

1. Four (4) inches for seeded areas up to finished grade elevations.

2. Two (2) inches for sodded areas up to two (2) inches below finished grade elevations.

B. Use topsoil in relatively dry state. Place during dry weather.

C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of sub-grades.

D. Remove stone roots, grass, weeds, debris and other foreign material while spreading.

E. Manually spread soil around trees, plants, buildings, to prevent damage that may be caused by grading equipment.

F. Lightly compact placed topsoil.

G. See also requirements of Section 02920, Topsoil.

3.3 SURPLUS MATERIAL

A. Remove surplus sub-soil and topsoil from site.

B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 02220

STRUCTURE EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work included under this Section consists of excavating, backfilling and grading required for the construction of structures following site rough grading as shown on the Drawings and as specified herein.

B. Definitions:

1. Maximum Density: Maximum weight in pounds per cubic foot of a specific material.

2. Optimum Moisture: Percentage of water in a specific material at maximum density.

3. Rock Excavation: Excavation of any hard natural substance that requires the use of explosives and/or special impact tools such as jackhammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.

C. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. The prices established in the Proposal for the work to be done will reflect all costs pertaining to the work. No claims for extras based on substrata or groundwater table conditions will be allowed.

D. Trench Safety Act: The Contractor shall be responsible for complying with the Trench Safety Act (90-96, Florida Law) and OSHA Excavation Standards, at a minimum.

1.2 QUALITY ASSURANCE

A. A Testing Laboratory retained by the Contractor will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of his progress.

1.3 RELATED WORK

A. Section 02110, Clearing, Grubbing, and Stripping.
B. Section 02140, Dewatering.
C. Section 02212, Finish Grading.
D. Section 02222, Excavating, Backfilling and Compacting

PART 2 - PRODUCTS

2.1 MATERIALS

A. Suitable materials for fill (designated on the drawings as fill or clean fill) shall be classified as A-1, A-3 or A-2-4 in accordance with AASHTO Designation M-145 and shall be free from vegetation and organic material. The Contractor shall use excavated material in order to meet fill requirements provided the material is suitable. The Contractor will be responsible meeting gradation requirements using the material. Thereafter, the Contractor shall provide all necessary materials.

B. Select Material: Select material shall be suitable material that does not contain any rock larger than will pass a 3-inch-diameter ring.

C. Washed Rock: Washed rock, where required, shall be coarse aggregate for concrete with a minimum of fine material (FDOT Grade 3 or 4).

PART 3 - EXECUTION

3.1 PREPARATION

A. Clearing: Clearing, grubbing and disposal of debris shall be performed as specified in Section 02110.

3.2 PERFORMANCE

A. Excavation:

1. The Contractor shall perform all excavation of every description and of whatever substances encountered, to the dimensions required for construction and as specified herein. All excavations shall be made by open cut.

2. Walls of the excavation shall be kept vertical and, if required to protect the safety of workmen, the public, this or other work or structures, or excavation walls, the excavation shall be properly sheeted and braced. Excavation for the structures shall be sufficient to provide a clearance between their outer surfaces and the face of the excavation, sheeting, or bracing, of not less than 2 feet. Materials encountered in the excavation that have a tendency to

slough or flow into the excavation, undermine the banks, weaken the overlying strata, or are otherwise rendered unstable by the excavation operation shall be retained by sheeting, stabilization, grouting or other approved methods.

3. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation leveled and left ready to receive construction. Material disturbed below the founding elevation in dewatered excavations shall be replaced with Class A concrete.

4. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

B. Dewatering: Any water that accumulates in the excavations for cast-in-place concrete structures shall be removed promptly by well point system or by other means satisfactory to the Engineer and City Project Manager in such a manner as to not create a nuisance to adjacent property or public thoroughfare. Pumps and engines for well point systems shall be operated with mufflers and at a minimum noise level suitable to a residential area. The Contractor shall dispose of such water in accordance with the requirements of Section 02140 and shall be responsible for any nuisance created due to the disposal of water from his drainage system.

C. Stockpiled Materials: Materials removed from the excavation shall be stored and disposed of in a manner that will not interfere with traffic at the site. Material suitable for backfill not needed for backfill at the structure, but needed elsewhere shall be stockpiled until moved and used elsewhere. Material unsuitable for use in backfill shall be removed and disposed of by the Contractor at the Contractor's expense immediately after backfill is placed.

D. Backfill: Backfill shall not be placed until the structure has been completed above the natural water table, is stable against hydrostatic uplift, exterior formwork has been removed and any unnecessary patching and grouting has been completed. Dewatering operations may then be stopped and select backfill shall be placed in uniform layers around the structure to the level of the water table. Above the water table backfill materials shall be placed in 8-inch layers and compacted to a minimum of 98 percent of maximum density as determined by AASHTO Method T-180. Backfilling shall be carried to the finished grades shown on the Drawings. Backfilling shall not commence until concrete to be covered has been inspected and approved.

E. Foundation Preparation:

1. The existing ground beneath concrete footings shall be compacted to a density of not less than 98 percent of its maximum density as determined

by AASHTO Method T-180 for a depth of not less than 2 feet below the bottom of the concrete footings. Any unsuitable foundation material shall be removed and replaced with suitable material.

2. Slabs on Grade: Subgrades for concrete slabs shall be cut, filled with suitable material and compacted to the required grade. The top 12 inches of concrete slab subgrade in cut sections and all fill material shall be compacted to a density of not less than 98 percent of its maximum density as determined by AASHTO Method T-180. The subgrade material shall contain no rock that will not pass through a 6-inch-diameter ring and, in the top 6 inches, will not pass through a 3-inch-diameter ring.

END OF SECTION

SECTION 02222

EXCAVATING, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work: The contractor shall perform all excavating, grading and backfilling as required for construction as shown on the drawings and specified herein. The contractor shall furnish all additional, approved fill material required in accordance with the specifications.

B. Definitions:

1. Maximum Dry Density: Maximum dry weight in pounds per cubic foot of a specific material.

2. Optimum Moisture: Percentage of water in a specific material at maximum dry density.

3. Rock Excavation: Excavation of any hard natural substance that requires the use of special impact tools such as jackhammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.

4. Suitable Materials: Suitable materials for fills shall be a non-cohesive, non-plastic granular local sand and shall be free from vegetation, organic material, marl, clay, silt, muck and deleterious debris. Hydric soils within wetland impact areas will be considered suitable material for the top 12-inches of backfill within the wetland impact areas.

5. Unsuitable Materials: Unsuitable materials are highly organic soil (peat or muck) classified as A-8 in accordance with AASHTO Designation M 145; clayey sands (Unified Soil Classification SC); plastic clays (United Soil Classification CL/CH); and organic debris. (This provision does not apply to the replacement of hydric soils in wetland impact areas.)

C. Plan For Earthwork: The contractor shall be responsible for having determined the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work. Prior to commencing the excavation, the contractor shall submit a plan of proposed operations to the engineer for review. The contractor shall

consider, and the plan for earthwork shall reflect, the equipment and methods to be employed in the excavation, backfilling and compaction operations. No claims for extras based on soil or rock sub-strata or groundwater table conditions shall be allowed.

D. Trench Safety Act: The contractor shall be responsible for complying with the Trench Safety Act (90-96, Florida Law) and OSHA Safety Standards for trench excavations, at a minimum.

1.2 QUALITY ASSURANCE

A. A Testing Laboratory employed by the contractor shall make such tests as are determined required by the Owner. The contractor shall schedule the work to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of the progress. Costs for soil testing shall be paid by the contractor. Any tests that have to be repeated because of the failure of the tested material to meet specification shall also be paid for by the contractor and the cost of any tests shall be deducted from payments due the contractor.

1.3 PROTECTION

A. Trench Cut Slopes: Trench cuts shall be sloped to guard against sidewall sloughing or collapse, or shall be braced in accordance with Subparagraph 1.03.B.

B. Sheeting and Bracing:

1. The contractor shall furnish, put in place, and maintain such sheeting and bracing as may be required to support the sides of excavations and guard against sidewall sloughing or collapse to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent roadway structures, utilities, power poles, etc. from undermining, and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel sheet piling, braced wood lagging and soldier beams or other approved methods. If the engineer is of the opinion that at any points sufficient or proper supports have not been provided, additional supports shall be installed upon the engineer's order, at the expense of the contractor. Compliance with such order shall not relieve or release the contractor from responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and compacted. Where soil cannot be properly compacted to fill a void, Class B concrete shall be used as backfill at no additional expense to the owner.

2. The contractor shall construct the sheeting outside the neat lines of the foundation unless indicated otherwise to the extent required for the method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall be adequate to withstand all pressure to which the structure or trench may be subjected. Any movement or bulging may occur shall be corrected by the

contractor at no expense to the owner to provide the necessary clearances and dimensions.

3. Where sheeting and bracing is required to support the sides of excavations, the contractor shall engage a Professional Engineer, registered in the State of Florida, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design, and certification of this shall be provided by the Professional Engineer.

4. Where, in the opinion of the engineer, the installation of sheeting, particularly by driving or vibrating, may cause distress to existing structures, the contractor shall evaluate the potential for such distress and, take all precautions to prevent distress of existing structures because of sheeting installation.

5. The contractor shall leave in place to be embedded in the backfill all sheeting and bracing not shown on the drawings but which the engineer and Owner may direct the contractor, in writing, to leave in place at any time during the progress of the work for the purpose of preventing injury to structures, utilities, or property, whether public or private. The engineer may direct that material used for sheeting and bracing be cut off at any specified elevation.

6. All sheeting and bracing not left in place shall be carefully removed in such a manner as not to endanger the work or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by compacting with tools especially adapted for that purpose, or otherwise as may be directed by the engineer.

7. The right of the engineer to order sheeting and bracing left in place shall not be construed as creating any obligation to issue such orders, and failure to exercise the right to do so shall not relieve the contractor from liability for damages to persons or property occurring from or upon the work growing out of a failure on the part of the contractor to leave in place sufficient sheeting and bracing to prevent any sidewall sloughing, collapse or moving of the ground.

8. No wood sheeting shall be withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than one (1) foot above the top of any pipe.

C. Pumping and Drainage:

1. The contractor shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations as stipulated in Section 02140.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. All fill material shall be subject to the approval of the owner and engineer.

2. All fill material shall be free of organic material, trash, deleterious debris, roots, clay balls, rubble or other objectionable material (except for hydric soils as detailed herein).

3. Excess or unsuitable material shall be removed from the job site by the contractor at no additional cost to the owner.

B. Common Fill: Common fill shall be sand and shall not contain stones, rock, concrete or other rubble larger than one (1) inch in diameter. It shall have physical properties that allow it to be easily spread and compacted. Additionally, common fill shall have no more than 12 percent by weight finer than the U.S. No. 200 mesh sieve.

C. Select Fill: Select fill shall be as specified above for common fill, except that the material shall contain no stones larger than ½ inch in largest dimension, and shall be no more than 12 percent by weight finer than the U.S. No. 200 mesh sieve.

D. Crushed Stone: Crushed stone shall be FDOT #57 washed and graded stone.

PART 3 - EXECUTION

3.1 PREPARATION

A. Grubbing:

1. The contractor shall strip and stockpile topsoil on the site at a location approved by the owner and engineer.

3.2 EXCAVATION

A. Excavating for Roadways/Structures/Utilities:

1. Excavation shall be made to such dimensions as shall give suitable room for maintenance of traffic, building the foundations and the structures, for bracing and supporting, for pumping and draining, and for all other work required.

a. Pipeline: Excavation shall be to the design elevation as shown on the drawings unless unsuitable subgrade materials are encountered at the bottom of the pipeline excavation, in which case these unsuitable materials shall be undercut and removed a minimum of 12-inches below the bottom of the pipeline and

shall be replaced with compacted approved select fill before placing the pipe. All organic laden sands or debris beneath the pipe bottom level shall be completely removed from beneath the pipe and replaced with compacted approved select fill.

b. Excavation for precast or prefabricated structures other than pipeline shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the bedding material. Prior to placing the bedding material, the excavation shall be sounded, if not dewatered, using a rigid pole to indicate to the satisfaction of the owner and engineer that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

c. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation is leveled and left ready to receive the WORK. Material disturbed below the foundation elevation in dewatered excavations shall be replaced with Class B concrete.

d. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

2. The contractor shall immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of the work.

3. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the drawings and shall anticipate the encounter of unknown obstructions during the course of the work.

4. Encounters with subsurface obstructions shall be hand excavated and immediately brought to the attention of the engineer.

5. Excavation and dewatering shall be accomplished by methods that preserve the undisturbed state of subgrade soils. Subgrade soils that become soft, loose, "quick" or otherwise unsatisfactory for support of pipes or structures because of inadequate dewatering or other construction methods shall be removed and replaced with crushed stone as required by the engineer at the contractor’s expense.

6. All pavements shall be cut prior to removal, with saws or power tools approved by the Owner and engineer.

7. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

8. All locations and elevations as required herein shall be permanently documented by the contractor, on the as-built drawings.

9. Hydric soils within designated wetland impact areas shall be segregated and stockpiled separately during excavation. Excavation and stockpiling of hydric soils shall be in accordance with all appropriate permits.

3.3 UNDERCUT

A. If the bottom of any excavation is below that shown on the drawings or specified because of contractor error, convenience, or unsuitable natural bedding material or subgrade due the contractor's excavation or dewatering methods, the excavation shall be refilled to the specified bottom of excavation grade with compacted approved select fill at no cost to the owner. Compaction method shall be as approved by the owner and engineer.

3.4 FILL AND COMPACTION

A. The contractor shall compact and backfill excavations and construct embankment according to the schedule on the following page. (Proctor Requirement shall be AASHTO T-180):

B. Excavations shall be backfilled to the original grade or as indicated on the drawings. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all laws and regulations and in such a manner that it does not create a nuisance or safety hazard. Care shall be used in operating compaction equipment to avoid damage to pipe or structures. Pipe bedding and trench backfill shall be firmly tamped under the pipe haunches along both sides of the pipe at the same time, taking care not to lift up the pipe off its bed. Backfilling shall continue by bringing the fill up equally on each side of the pipe to avoid displacing the pipe laterally.

Area	Material	Compaction
1. Pipe Bedding	Select Fill or Crushed Stone	95% of maximum dry density by modified Proctor method (in 12" loose lifts if additional bedding material is required).
2. Pipe Trench Backfill	Common Fill	12" loose lifts, 95% of maximum dry density by modified Proctor method (98% under roadways and drives).

		Note: Above the top of the pipe only, backfill material with a maximum fines content of 20% may be used.
3. Bedding Beneath Structures (other than pipeline) and Beneath Buried Valves	Select Fill or Crushed Stone	12" loose lifts, compacted to 98 % of maximum dry density by modified Proctor method. Fill shall not be placed over any in-place soils until those deposits have been compacted to 98% modified Proctor.
4. Backfill Around Structures	Common Fill	8" loose lifts, 98% of (other than pipeline) maximum dry density by modified Proctor method.

C. Embankments shall be constructed true to lines, grades and cross sections shown on the drawings or ordered by the engineer. Embankments shall be placed in successive layers of not more than 8 inches in thickness, loose measure, for the full width of the embankment. As far as practicable, traffic over the work during the construction phase shall be distributed to cover the maximum surface area of each layer.

D. If the contractor requests approval to backfill utilizing lifts and/or methods other than those specified herein, such request shall be in writing to the engineer. Approval will be considered only after the contractor has performed tests, at the contractor's expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The owner and engineer's approval shall be in writing.

E. Hydric soils stockpiled during excavation shall be replaced within the top 12-inches of wetland impact areas and in accordance with all applicable permits.

3.5 DISPOSAL

A. The contractor shall properly dispose of all excess or unsuitable material at no additional expense to the Owner.

END OF SECTION

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SECTION 02276

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work:

1. The work specified in this section consists of designing, providing, maintaining and removing temporary erosion and sedimentation controls as necessary.

2. Temporary erosion controls include, but are not limited to, grassing, mulching, setting, watering, and reseeding on-site surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations that will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the DEP.

3. Temporary sedimentation controls include, but are not limited to silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces that will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner.

4. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective.

B. Related Work Described Elsewhere:

1. Shop Drawings: Section 01340.

2. Solid Sodding: Section 02934.

1.2 REFERENCE DOCUMENTS

A. Standard Building Code.

PART 2 - PRODUCTS

2.1 EROSION CONTROL

A. Solid Sodding is specified in Section 02934.

B. Netting - fabricated material acceptable to the Owner, Engineer and City Project Manager.

2.2 SEDIMENTATION CONTROL

A. Bales - clean, seed free cereal hay type.

B. Netting - fabricated material acceptable to Owner.

C. Filter stone - crushed stone conforming to Florida Department of Transportation specifications.

D. Concrete block - hollow, non-load bearing type.

E. Concrete - exterior grade but less than one inch thick.

PART 3 - EXECUTION

3.1 EROSION CONTROL

A. Minimum procedures for grassing are:

1. Scarify slopes to a depth of not less than six inches and remove large clods, rock, stumps, roots larger than ½-inch in diameter and debris.

2. Sow seed within twenty-four (24) hours after the ground is scarified with either mechanical seed drills or rotary hand seeders.

3. Apply mulch loosely and to a thickness of between 3/4-inch and 1-1/2 inches.

4. Apply netting over mulched areas on sloped surfaces.

5. Roll and water seeded areas in a manner that will encourage sprouting of seeds and growing of grass. Reseed areas that exhibit unsatisfactory growth. Backfill and seed eroded areas.

B. Working in or crossing waterways or water bodies:

1. Construction shall be minimized in both permanent and intermittent waterways and within thirty (30) feet from top of bank of the waterways. Barriers shall be used to prevent access. Where in-channel work cannot be avoided, precautions shall be taken to stabilize the work area during construction to minimize erosion. If the channel and adjacent area are disturbed during land alteration, they shall be stabilized within three (3) working days after the in-channel work is completed.

2. Turbidity barriers or other filters/siltation reduction devices shall be installed on the downstream side of the in-channel alteration activity to eliminate impacts due to increased turbidity. Wherever surface water crossings are required, properly sized

temporary culverts shall be provided by the Contractor and removed when construction is completed. The area of the crossing shall be restored to a condition as nearly as possible equal to that which existed prior to any construction activity.

3.2 SEDIMENTATION CONTROL

A. Install and maintain silt dams, traps, barriers, and appurtenances as necessary to prevent any contaminated water from leaving the project. Hay bales which deteriorate and filter stone that is dislodged shall be replaced.

3.3 PERFORMANCE

A. Should any of the temporary erosion and sediment control measures employed by the Contractor fail to produce results that comply with the requirements of the State of Florida Department of Environmental Protection, Contractor shall immediately take whatever steps are necessary to correct the deficiency at his own expense.

END OF SECTION

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SECTION 02300

DEMOBILIZATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This section covers the work necessary to remove from the site all personnel, supplies, equipment, and site restoration and cleanup. Demobilization shall be completed within two weeks after the completion of all other site work.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide all materials and equipment required to accomplish the work as specified.

B. On all questions concerning the acceptability of materials, execution of work, determination of costs, the decision of the owner and engineer shall be final and binding upon parties.

C. The contractor shall assume full responsibility for all supplies, materials, and equipment required by it for the contracted work, whether furnished by itself or other parties.

PART 3 - EXECUTION

3.1 GENERAL

A. Accomplish all required work in accordance with the applicable portions of these Specifications and Parts or as approved by the owner and engineer.

B. The replacement of minor obstructions and restoration of physical features, even though not shown or specifically mentioned shall be anticipated and accomplished.

C. Upon leaving the site at the completion of the work, the contractor shall clean equipment and materials of surface and subsurface materials contacted at the site.

3.2 CLEANUP OF CONSTRUCTION AREAS

A. Avoid defacing of the site area. Do not dump waste oil, fuel, rubbish, or other materials on the ground. Restore the site to condition approved by the owner and engineer.

B. Replace or repair any facility, equipment, buildings, fencing, etc. damaged during work. Site cleanup shall be completed to the satisfaction of the owner and engineer. Solid waste such as subsurface fluids shall be contained so that it shall not migrate from the

site or areas designated by the owner and engineer. This includes drill cuttings and debris such as wood, pipe, and hose. These materials shall be segregated and identified and removed and disposed of offsite, as approved by the owner and engineer.

PART 4 - PAYMENT

4.1 GENERAL

A. Payment for all work, materials, and equipment specified in this section shall be at the lump sum unit price as stated in the contractors bid for demobilization. Payment shall only be made once for the site, and shall be for clean-up and removal of equipment.

B. A project closeout meeting is mandatory at the site following contractor's completion of Demobilization. Cost for this shall be included in the contractor's Bid for demobilization.

C. Production and submittal of Record Drawings as described in Section 01300 shall be included in the contractor's bid for demobilization.

END OF SECTION

SECTION 02574

PAVEMENT REMOVAL AND REPLACEMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Work included under this Section consists of cutting, removing, protecting and replacing existing pavements of the various types encountered, driveways, sidewalks, curb and combination curb and gutter.

B. Permits: The Contractor shall obtain the necessary permits (City of Venice, "Right-of Way Permit", “Utilities Construction Permit” and other applicable authorization), prior to any roadway work. Additionally, the Contractor shall provide advance notice to the appropriate authority, as required, prior to construction operations. Contractor shall abide by all conditions of the permit.

C. Protection of Existing Improvements: The Contractor shall be responsible for the protection of all pavements, sidewalks, and other improvements within the work area. All damage to such improvements, because of the Contractor's operations, beyond the limits of the work of pavement replacement as described herein, shall be repaired by the Contractor at his expense.

D. Prior to the start of construction, the Contractor shall obtain cross-section information at intervals as necessary to provide accurate restoration for pavement, sidewalks and driveways to be removed and replaced to insure that the existing grades will be matched.

1.2 JURISDICTIONAL REQUIREMENTS

A. All pavement work shall be in full compliance with all requirements of the permit drawings, and to the satisfaction of the Florida Department of Transportation.

B. Portions of the latest edition of the Standard Specifications for Road and Bridge Construction of the Florida Department of Transportation and Supplement thereto hereinafter referred to as the FDOT Specifications, are referred to herein and amended, in part, and the same are hereby made a part of this Contract to the extent of such references, and shall be as binding upon the Contract as though reproduced herein in their entirety.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials, including limerock, shell, bituminous prime and tack coat, and asphaltic concrete for the above work shall meet the requirements established therefore by the FDOT specifications.

PART 3 - EXECUTION

3.1 PREPARATION

A. Pedestrian or School Crossings: Where the work crosses or interferes with school or pedestrian crossings, extreme care shall be taken by the Contractor to insure the safety of school children or other pedestrians.

3.2 PERFORMANCE

A. Removals:

1. Pavement Removal:

a. Where existing pavement is to be removed, the surfacing shall be mechanical saw cut prior to trench excavation, leaving a uniform and straight edge, with minimum disturbance to the remaining adjacent surfacing. Where brick paving has been overlain with asphalt, the brick pavement shall be mechanical saw cut, removed and disposed to the same dimensions as for asphalt. The width of cut for this phase of existing pavement removal shall be minimal, and the maximum width of cut shall not exceed the dimensions shown on the drawings without prior approval of the Owner and Engineer.

b. Immediately following the specified backfilling and compaction, a temporary asphalt surface no less than one-inch (1") shall be applied to the cut areas. This temporary surfacing shall provide a smooth all weather traffic surface with the existing roadway and shall be maintained until final restoration. Said surfacing shall remain for a minimum of 10 calendar days in order to assure the stability of the backfill under normal traffic conditions. Following this period the temporary surfacing shall be removed with the milling of the roadway and final roadway surface restoration accomplished.

c. In advance of final restoration, the temporary surfacing shall be removed and the existing pavement mechanically sawed straight and cleaned to that indicated by the contract drawings. Following the above operation, the Contractor shall proceed immediately with final pavement restoration in accordance with these requirements.

2. Sidewalk, Drive & Curb Removal: Concrete or asphalt sidewalks, curbs, combination curb and gutter, walks, drive ribbons, or driveways shall be removed by initially sawing the structure, with a suitable power saw, as specified above for pavement. When a formed joint in the concrete exists within 3-feet of the proposed saw cut and parallels the proposed saw cut, the removal line shall be extended to the formed joint. After sawing, the material shall be removed.

B. Restorations:

1. General: Street or roadway pavement cut and removed in connection with trench excavation shall be replaced or restored in equal or better condition than the original and as shown on the Drawings.

2. All existing utility castings, including valve boxes, junction boxes, manholes, hand holes, pull boxes, inlets and similar structures in the areas of construction that are to remain in service shall be adjusted by the Contractor to bring them flush with the surface of the finished work.

3. Pavement Restoration - Asphalt:

a. Limerock or shell base course shall be compacted for its full thickness to not less than 98 percent of maximum density as determined by AASHTO Designation T 180. Field density of limerock or shell base in place shall be determined by AASHTO Designation T 238.

b. Construction methods and equipment shall generally meet the requirements as established in the FDOT specifications, but shall be modified to meet the relatively narrow strip construction conditions. Any such modifications shall be approved by the Owner and Engineer prior to their use.

c. After the application of the prime coat on the base, the prime coat shall be allowed to cure. The Contractor shall take all necessary precautions to protect the primed surface against damage during this interval. If it is not proposed to proceed at once with the application of the surface course, primed surface shall be given a light application of clean sand and opened to traffic.

d. Joints with existing surface and base shall be straight and neat. If necessary to obtain a straight neat joint, the Contractor shall cut out sufficient existing material and replace it with new material.

e. The upper surface of the completed base course shall be compacted to an elevation to permit the full depth of the surface course to be constructed without deviating from the grade of the pavement surface. The completed surface shall match the line and grade of the existing surface. When pavement is removed to the edge of the roadway, the replaced base course shall extend not less than 6-inches beyond the edge of the surfacing.

4. Driveway Restoration - Asphalt: Driveway pavement with limerock base cut and removed in connection with trench excavation shall be replaced or restored as specified above for street or roadway pavement, except the new limerock base course shall equal the existing base course in thickness, except that in no case shall new driveway base course be less than 6-inches in thickness. Muck or unsuitable material found under existing driveway construction will be removed and replaced to the limits of excavation.

5. Concrete, Sidewalk, Walkway, Driveway Ribbon and Curb Restoration:

a. Concrete sidewalks, walkways, driveways, driveway ribbons and curbs required to be removed for the installation of facilities under this Contract shall be restored. Class B concrete shall be used in all cases.

b. Replaced portions of these items shall conform to the lines, grades and cross-sections of the removed portions. Concrete sidewalks and walkways shall be of 4-inch thickness except where crossing a driveway where they shall be 6-inch thick with 6x6x10 WWF reinforcement; concrete driveways and driveway ribbons shall be 6-inch thickness with 6x6x10 WWF reinforcement. Replaced concrete curb and/or gutter shall joint neatly to the remaining section.

6. Asphalt Sidewalk Restoration:

a. Paved asphalt sidewalks required to be removed for the installation of facilities under this Contract shall be replaced with a 4-inch limestone or shell base and 2-inch Type II asphaltic concrete surface course. The base course shall be compacted to 95 percent of maximum density as determined by AASHTO Designation T-180, and the surface course shall be installed in accordance with FDOT specifications. Replaced portions of the sidewalk shall conform to the lines, grades and widths of the removed portions.

7. Pavement Restoration - Concrete: Rigid pavement shall be replaced in kind with Class B concrete, using high early strength cement. The base course for rigid pavement shall be replaced with limerock base material and compacted to a thickness to match the existing base.

8. Asphaltic Concrete Surface Course:

   The work under this section includes asphaltic concrete surface course paving as shown on the plans. This paving shall be in addition to the asphaltic concrete pavement restoration as specified herein above. This 2-inch surface course overlay shall be type SP-9.5 asphalt, installed in two 1" lifts, and shall extend over the reconstructed base course to the limits shown on the plans.

9. Nonsurfaced streets, alleys and driveways shall be restored with 6-inches of compacted limerock base material placed in the top of the trench.

END OF SECTION

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SECTION 02601

MANHOLES

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The Contractor shall furnish all material and labor necessary to install manholes as shown on the Drawings or as directed by the Engineer.

1.2 SUBMITTALS

A. Certificates: The Contractor shall submit manufacturer's certificates of conformance.

B. Shop Drawings: The Contractor shall submit manufacturer's drawings and data sheets for material to be supplied under this Section. Indicate sizes and types to be installed.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Upon delivery and before unloading, the Contractor shall inspect the manhole sections for any damage occurring in transit and note such damage on the delivery ticket.

B. The means by which the manhole sections are unloaded is the decision and responsibility of the Contractor. He shall follow recommendations of the manufacturer.

C. The Contractor shall follow manufacturer's recommendations for storage of manhole sections in order to minimize damage prior to installation.

D. The Contractor shall adhere to the standard procedures given by the manufacturer for handling the manhole sections.

PART 2 - PRODUCTS

2.1 DESCRIPTION

A. Precast reinforced manholes: Manholes shall be manufactured in accordance with ASTM-C478 latest revisions. The minimum allowable wall thickness is 6". The concrete for sections and base shall be Type II cement with a minimum 28 day compressive strength of 4000 PSI. Tests when required shall be in

accordance with ASTM-C497.

B. Precast manhole base: The bases shall be monolithically cast and shall consist of a manhole bottom and a wall which shall extend a minimum of 6" above the top of the highest in-flowing sewer. The top of the base section shall be tongue and groove section. There shall be a minimum distance of 4" between the invert of the lowest out flowing sewer and floor of the precast base to provide for the construction of a formed invert and bench wall within the manhole. No more than two (2) lift holes shall be cast in a manhole section. These holes must be properly plugged with a rubber plug and non shrinkage grout, or be non-penetrating design.

C. Precast manhole pipe connections: Connections between reinforced concrete manhole structures and sewer pipe shall be flexible connectors conforming to ASTM C 923 latest revision.

D. Manhole frames and covers: Shall be water tight. Traffic loading shall be as required by the service conditions (see standard detail).

E. Precast manhole section joint shall be sealed with a pre-formed gasket, plastic joint sealer, meeting the Federal Specification SS-S-00210, as supplied by Atlantic Concrete Products, "Ram Neck" as supplied by K.T. Snyder Co., or equal.

F. Manhole surface protection: Manholes shall have factory applied coatings on the interior and exterior. Surface preparation and coating application shall comply with the manufacturer's recommendations.

1. Exterior: Coating shall be factory applied with two (2) 40-Mil coats of coal-tar epoxy. Acceptable coating is BITU-Mastic or equal. Total dry film thickness shall be 3.5 mils. Coating shall be applied to the tongue and groove area of the manhole segments.

2. Interior: Coating shall be factory applied with two (2) 40-Mil coats of coal-tar epoxy. Acceptable coating is BITU-Mastic or equal. Total dry film thickness shall be 3.5 mils.

2.2 MANHOLE INVERTS

A. Formed: Manhole invert channels shall be formed from Type II concrete.

B. Precast: Developed manhole bases shall also be allowed, as approved by the Engineer.

2.3 MANHOLE ADJUSTMENT

A. Manhole ring and cover height adjustable shall be accomplished by using precast concrete adjust rings, non-metallic adjustment rings (HDPE) or standard red fire brick.

B. Where additional pipe connections or modification of the existing factory made openings are required on new or existing precast concrete manholes, all cutting relative thereto shall be performed only by a power driven abrasive wheel or saw (hole saw). It is specifically noted that such connections to existing manholes shall be installed in accordance with manufacturer's recommendations for neoprene boot, link seal or equal. All cuts shall be coated with an appropriate protective coating.

2.4 BRICK MANHOLES ADJUSTMENTS

A. Shall be as specified in ASTM designation C32, Grade MS (hard brick), with mortar for the masonry work as specified in ASTM designation C270, Type M, with cement being Portland Type II only. Bricks shall be laid in a full bed of mortar with joints (1/2″ to 3/4" thick) completely filled. Courses shall be laid continuously with alternating joints. In no case, shall the brick chimney exceed twelve inches (12") in height.

2.5 MANHOLE FRAMES AND COVERS

A. Frames and covers shall be water-tight. Traffic loading shall be required by the service conditions. See construction detail.

B. Manhole cover shall sit neatly in the rings, with contact edges machined for even bearing and top flush with ring edge. The cover shall have two non-penetrating pick holes. Cover on sanitary sewer manholes shall not be perforated. The cover shall read as shown on ring and cover detail.

PART 3 - EXECUTION

3.1 MANHOLES

A. General: The excavation shall be kept free of water while the manhole is being installed and the area shall not be backfilled until inspected by the Engineer.

B. Precast: Manhole foundations and sections shall be set as shown on the Drawings and at the elevation shown on the profile.

C. Two (2) strips of "Ram-Neck" shall be applied at all joints to assure proper extrusion.

3.2 INVERTS

A. The invert channels shall be constructed when the manhole is being built using prefabricated forms.

B. Invert channels for a "straight-through" manhole may be formed by laying the pipe straight through the manhole, pouring the concrete invert, and then breaking out the top half of the pipe. Curved inverts shall be constructed of concrete, as shown on the drawings and shall form a smooth, even half-pipe section.

C. Precast invert channels may also be allowed, as approved by the Engineer.

3.3 MANHOLE FRAMES AND COVERS

A. Manhole casting shall be centered over the conical top and adjusted to be flush with the proposed grade.

B. The area on which the casting is to be set is to be clean and roughened and a good bed of mortar placed to receive the frame.

C. In no case shall the manhole chimney exceed twelve inches (12") in height.

END OF SECTION

SECTION 02614

DUCTILE IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The extent of the ductile iron pipe (DIP) is shown on the drawings.

B. Reference to standard specifications shall be construed to mean the latest edition or revision.

1.2 SUBMITTALS

A. The Contractor shall submit shop drawings to the Owner/Engineer including, but not limited to, dimensions and technical specifications for all piping.

B. The Contractor shall submit and shall comply with pipe manufacturer's recommendation for handling, storing and installing pipe and fittings.

PART 2 - PRODUCTS

2.1 PIPE

A. For Aboveground Installation:

1. Ductile iron pipe for the interior of structures and aboveground installation shall conform to ANSI A21.15-75 and be flanged. Thickness class shall be Class 53 for all sizes. Flanges shall conform to ANSI A21.15.

B. For Underground Installation:

1. Ductile iron pipe shall conform to ANSI A21.51/AWWA C151. Class 51 pipe for water and Class 52 pipe for sewer and shall have a wall thickness designed in compliance with ANSI A21.50, "American National Standard for the Thickness Design of Ductile Iron Pipe". Where ductile iron pipe is threaded for flanges, the thickness shall not be less than class 53.

2. Generally, joints for ductile iron pipe shall be restrained push-on type designed in accordance with ANSI A21.11 (AWWA C111). Joint lubrication shall be as furnished by the manufacturer.

3. At certain locations, restrained joint pipe, fittings, specials, etc., shall be used as shown on the drawings. Restrained joints shall meet all applicable requirements of ANSI, Standard A21.11 or latest revision. All special joints shall be capable of withstanding dead-end axial thrusts and end separations resulting from an internal pressure of 250 psi with an adequate factor of safety, and shall remain watertight.

   a. Restrained joints shall be Flex-Ring Lok-Fast or Lok-Ring as manufactured by American Cast Iron Pipe Company, or TR Flex or Lok-tyte as manufactured by United States Pipe and Foundry Company or engineer-approved equal.

   b. Mechanical joint restraint glands may be used to restrain mechanical joint pipe and fittings to the plain end of ductile iron and PVC pipe and ductile iron fittings when used in conjunction with thrust blocks of reduced size. The Utilities Engineer must approve thrust block size. Joint flexibility shall be maintained. Restrainer glands shall be manufactured of ductile iron per ASTM A536. Restrainer glands shall be "MEGALUG" as manufactured by EBAA Iron Inc. or engineer-approved equal.

   c. If required, and as approved by the Engineer and City Project Manager, push-on bell and spigot ductile iron pipe may be restrained using "Tieanchor III" joint restrainers by Star National Products, or engineer-approved equal, when used in conjunction with thrust blocks of reduced size. The Utilities Engineer must approve thrust block size. These joint restrainers shall be used in conjunction with eyebolts, threaded rods, rod couplings, nuts and washers furnished by Star National Products as specified herein, or engineer-approved equal.

C. Lining:

1. The interior of ductile iron pipe and fittings shall be cement lined or holiday free fusion bonded epoxy line or engineer-approved equal in accordance with ANSI A21.4 (AWWA C104).

D. Exterior Finish:

1. For aboveground installations and inside vaults, the exterior surfaces of exposed pipe and fittings shall be coated with two (2) 20 mil minimum layers of coal tar epoxy and a finish dry film thickness of 40 mils minimum.

2. For underground installation, pipe and fittings shall have the standard bituminous coat on the exterior, in accordance w/ANSI A21.4 (AWWA C104).

E. Corrosion Protection:

1. All underground ductile iron pipe and fittings shall be enclosed in a high density, cross laminated polyethylene sheet or tube and each length joined with a two inch (2") wide polyethylene adhesive tape. The sheet or tube shall be made from polyethylene resin meeting the requirements of ASTM D1248 and shall be Type III, Class B, Grade P-33 and four (4) mils thickness. The sheet or tube shall be as manufactured by Polytube Corporation, Birmingham, Alabama, or engineer-approved equal. The sheet or tube shall be in accordance with the provisions of ANSI, Standard A21.5 - AWWA C105. Installation methods shall be such as to minimize damage to the sheet or tube but where required the adhesive tape should also be used to repair tears or punctures.

F. Polyethylene sheet shall be the following colors for specific purpose:

1. Potable water - Blue

2. Reuse water - Purple

3. Sewer - Green

The Engineer and City Project Manager shall determine the color of the polyethylene sheet for all other specific purposes.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 02622

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS (AWWA SPECIFICATIONS C-900 & C-905)

PART 1 - GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish all labor, materials, equipment and incidentals required to install the plastic piping, fittings and appurtenances complete and ready for use as specified in the Contract Documents.

1.2 DESCRIPTION OF SYSTEM

The Contractor shall install the piping in the locations as shown on the Drawings.

1.3 QUALIFICATIONS

All plastic pipe, fittings and appurtenances shall be furnished by a single manufacturer who is fully experienced, reputable, qualified and specializes in the manufacture of the items to be furnished. The pipe and fittings shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these Specifications.

1.4 SUBMITTALS

A. The Contractor shall submit shop drawings to the Owner and Engineer including, but not limited to, dimensions and technical specifications for all piping.

B. The Contractor shall submit to the Owner and Engineer, samples of all materials specified herein.

C. The Contractor shall submit and shall comply with pipe manufacturer's recommendation for handling, storing and installing pipe and fittings.

D. The Contractor shall submit pipe manufacturer's certification of compliance with these Specifications.

1.5 TOOLS

The Contractor shall supply special tools, solvents, lubricants, and caulking compounds required for proper installation. Compensation shall be included in the pipe bid item.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Class-Rated Polyvinyl Chloride (PVC) Pipe

1. Pressure class-rated PVC pipe and accessories four to twelve inches (4"-12") in diameter, where shown or as specified on the Drawings, shall meet the requirements of AWWA Specification C-900 "Polyvinyl Chloride (PVC) Pressure Pipe". Pipe shall be Class 235, meeting requirements of Dimension Ratio (DR) 18 and shall have the dimension of ductile iron outside diameters. Each length of pipe shall be hydrotested to four (4) times its class pressure by the manufacturer in accordance with AWWA C-900.

2. PVC pipe 14" through 24" shall meet the requirements of AWWA Standard C-905, Polyvinyl Chloride (PVC) Water Transmission Pipe. Pipe for potable and reclaim water shall meet the requirements for dimension ratio (DR) 18. Each length of pipe shall be tested at twice the pressure rating (PR 235 psi) for a minimum dwell of 5 seconds in accordance with AWWA C-905. Eighteen inch (18") thru 36" PVC pipe for sewer force mains shall meet AWWA C-905 requirements for dimension ratio (DR) 21. Each length of pipe shall be tested at twice the pressure rating (PR 200 psi) for a minimum dwell of five seconds in accordance with AWWA C-905. Pipe shall be listed by Underwriters Laboratories. Provisions shall be made for expansion and contraction at each joint with an elastomeric ring, and shall have an integral thickened bell as part of each joint. PVC Class pipe shall be installed as recommended by the manufacturer. Pipe shall be furnished in nominal lengths of approximately 20 feet, unless otherwise directed by the Engineer and City Utilities Project Manager. Pipe and accessories shall bear the NSF mark indicating pipe size, manufacturer's names, AWWA and/or ASTM Specification number, working pressure, and production code.

3. Gaskets for 16" diameter and larger pipe shall be EPDM (Ethylene-Propylene Dine Monomer).

4. PVC pipe less than 4" in diameter may be constructed using pipe conforming to ASTM D2241 with push-on joints. Pipe shall be 200 psi pipe-SDR 21 unless otherwise specified by the Engineer and City Utilities Project Manager. PVC pipe shall not be used for working pressures greater than 125 psi.

5. Pipe shall be blue for potable water mains, green for sewage force mains and purple for reclaimed water mains. All potable water pipe shall be NSF certified and copies of lab certification shall be submitted to the Engineer

and City Utilities Project Manager.

6. Where colored pipe is unavailable, white PVC color coded spiral wrapped pipe shall be installed.

B. Joints

1. The PVC joints for pipe shall be of the push-on type unless otherwise directed by the Engineer and City Utilities Project Manager so that the pipe and fittings may be connected on the job without the use of solvent cement or any special equipment. The push-on joint shall be a single resilient gasket joint designed to be assembled by the positioning of a continuous, molded resilient ring gasket in an annular recess in the pipe or fitting socket and the forcing of the plain end of the entering pipe into the socket, thereby compressing the gasket radially to the pipe to form a positive seal. The gasket and annular recess shall be designed and shaped so that the gasket is locked in place against displacement as the joint is assembled. The resilient ring joint shall be designed for thermal expansion or contraction with a total temperature change of at least 75 degrees F in each joint per length of pipe. The bell shall consist of an integral wall section with a solid cross section elastomeric ring that shall meet requirements of ASTM F-477. The thickened bell section shall be designed to be at least as strong as the pipe wall. Lubricant furnished for lubricating joints shall be nontoxic, shall not support the growth of bacteria, shall have no deteriorating effects on the gasket or pipe material, and shall not impart color, taste, or odor to the water. Gaskets shall be suitable for use with potable water, reclaimed water or sanitary sewer as applicable.

2. Restrained joints shall be provided at all horizontal and vertical bends and fittings, at casings under roads and railroads and at other locations shown on the Contract Drawings. PVC joints for pipe shall be restrained. Restrained joint PVC pipe shall be installed in strict accordance with the manufacturer's recommendation.

3. A continuous or fusible pipe shall be formed by butt fusing sections of pipe using manufacturer approved equipment. The fused joints shall have equal or greater tensile and hydrostatic strength than the pipe.

PART 3 - EXECUTION

3.1 INSTALLATION

The Contractor shall install the plastic pipe in strict accordance with the manufacturer's technical data and printed instructions. Direct bury pipe shall have metallic tape of the proper color placed directly above the pipe and 24" below finished grade.

3.2 INSPECTION AND TESTING

A. All pipe, whether installed by open cut or horizontal directional drill, shall be tested and disinfected as specified herein.

B. Field tests shall be made to confirm compliance with the contract and to establish compliance with the technical provision. The test shall be performed by the Contractor as herein specified. All piping, and equipment shall be tested in the field in the presence of the Engineer or Owner's Representative, in the manner prescribed in the Sections of these Specifications pertaining to such installation.

C. Prior to pressure testing, all mains shall be flushed and pigged to remove all sand and other foreign matter. The velocity of the flushing water shall not be less than 2 feet per second. Flushing shall be terminated at the direction of the Engineer or Owner's Representative. The Contractor shall dispose of the flushing water without causing a nuisance or property damage.

D. Pressure and Leakage Test of Underground Piping

1. Hydrostatic pressure and leakage tests for ductile iron and PVC pipe shall conform to Section 4 of AWWA C600 Specification with the exception that the Contractor shall furnish all gauges, meters, pressure pumps and other equipment needed to test the line.

2. The pressure required for the field hydrostatic pressure and leakage test shall be 150 psi. The Contractor shall provide temporary plugs and blocking necessary to maintain the required test pressure. Corporation cocks at least 2 inches in diameter, pipe riser and angle globe valves shall be provided at each pipe dead-end in order to bleed air from the line. The cost of these items shall be included as part of testing.

3. All leaks evident at the surface shall be repaired and leakage eliminated regardless of total leakage as shown by test. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with. Defective materials, pipes, valves, and accessories shall be removed and replaced. The pipe lines shall be tested in such sections as may be directed by the Engineer or Owner's Representative by shutting valves or installing temporary plugs as required. The line shall be filled with water and all air removed and the test pressure shall be maintained in the pipe for the entire test period by means of a force pump to be furnished by the Contractor. Accurate means shall be provided for measuring the water required to maintain this pressure. The amount of water required is a measure of the leakage.

4. During the duration of the test, the line pressure shall not be permitted to drop more than 5 psi below the test pressure. Once the pressure drops 5 psi below

the test pressure, the line shall be refilled until the test pressure is restored.

5. The amount of leakage which will be permitted shall be in accordance with AWWA, C600 Standards for all pressure. No pipe installation shall be accepted if the leakage is greater than that determined by the following formula:

$$\frac{L = SD(P)^{1/2}}{148{,}000}$$

In which L is the allowable leakage in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. The duration of the leakage test shall be two (2) hours for pressurized pipes. The equation is based on 18' pipe lengths and shall be adjusted accordingly for other lengths.

6. The Contractor must submit his plan for testing to the Engineer for review at least ten (10) days before starting the test. The Contractor shall remove and adequately dispose of all blocking material and equipment after completion and acceptance of the field hydrostatic test, unless otherwise directed by the Engineer or Owner's Representative. Any damage to the pipe coating shall be repaired by the Contractor. Lines shall be totally free and clean prior to final acceptance.

7. No leakage will be allowed for solvent weld PVC pipe or pipe sections less than 500 feet in length.

3.3 DISINFECTION AND CLEARANCE OF POTABLE WATER LINES

A. Prior to disinfection, the lines shall be pigged, flushed and pressure tested. Lines shall be disinfected in accordance with the applicable requirements of AWWA C651 and as described hereinafter. At no time are valves on the distribution system to be operated without the presence of a duly qualified representative of the Owner.

B. Before being placed in service, all potable pipe installed under this Contract shall be disinfected by chlorination. Either of the following methods of procedure may be followed upon approval of the Engineer.

1. Liquid Chlorine: A chlorine gas-water mixture shall be applied by means of a solution-feed chlorination device. The device must provide a means to prevent the backflow of water into the chlorine cylinder.

2. Calcium Hypochlorite Solution: A solution consisting of 5 percent calcium

hypochlorite powder and 95 percent water by weight shall be prepared and this solution will be injected or pumped into the line.

C. The point of application of the chlorinating agent shall be at the beginning of the pipeline extension and through a corporation stop inserted in the top of the newly laid pipe. The water injector for delivering the chlorine-bearing water into the pipe may be supplied from a tap on the pressure side of the gate valve controlling the flow into the pipeline extension. Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline duringthe application of chlorine. The Contractor shall not allow the chlorine solution in the line being treated to flow back into the line supplying thewater.

D. Treated water shall be retained in the line at least 24 hours. After the chlorine treated water has been retained for the required time, the chlorine residual in the line shall be at least 50 mg/l. Should the initial procedure fail to result in the conditions specified, the chlorination procedure shall be repeated at the Contractor's expense until satisfactory results are obtained.

E. The Contractor shall install sample taps and blowoffs on the new main and at the end of each new branch of the piping system. The Contractor shall furnish and install all piping, tubing, valves and ancillary appurtenances for chlorination points and sample points. Sample tap locations for potable water mains shall be spaced no greater than 1,000 feet apart.

F. The Contractor shall flush the chlorinated disinfection water from the piping system until a free chlorine residual of 1 to 1.5 mg/L is maintained. All water shall be dechlorinated at the point of discharge, prior to entering swales, inlets or surface waters. All water used in testing shall become property of Contractor and shall be legally disposed of at the approved location.

G. Samples for bacterial analysis shall be taken by a certified sampler from the contractor's independent laboratory and submitted for analysis to said laboratory. Two (2) consecutive day approved samples shall be required. If samples do not demonstrate satisfactory results, the disinfection procedure shall be repeated at the Contractor's expense until two (2) consecutive sets of satisfactory samples are obtained. The period between such series of samples shall be a minimum of 24 hours.

H. Two (2) consecutive days' passing bacteriological results and the Contractor's As-Builts will be required to submit certification packages to the Health Department. The Contractor shall submit the analyses and signed and sealed survey As-Built drawings to the Engineer, who will review them for completeness and conformance with the Contract Documents. If data is missing, the Contractor will be required to provide the additional data, as requested by the Engineer, before the certification package can be submitted. As- Built data for clearance of the water mains does not need to include

information on private property. Information on private property only needs to be included in the final As-Builts provided to the Owner for its records.

I. Once the bacteriological testing results and As-Builts are acceptable, the Engineerwill submit the analysis results, As-Built drawings and certification forms to the Health Department. Once the Health Department approves the Certification and issues a Letter of Clearance, the new main may be placed into service. The Contractor shall allow for a 10 working day minimum period between the Engineer's acceptance of the bacteriological testing results and As-Built drawings and issuance of the Letter of Clearance.

J. Bacteriological test results greater than 60 days old will be rejected by the Health Department. In such case, the Contractor will be required to repeat the testing at no additional cost to the Owner.

END OF SECTION

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SECTION 02750

ASBESTOS CEMENT MAIN ABANDONMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Work in this Section includes all labor, material, equipment, testing, tax, overhead, and profit necessary to install, construct, and place into service the items described in this Section to provide a complete and functional system ready for use by the City.

B. If it is necessary to remove any abandoned Asbestos Pipe (AC) and/or appurtenances to accommodate improvements, the AC main(s) and/or appurtenances shall be removed if requested by the City and disposed of in accordance with this entire standard.

C. Cutting and disposal of asbestos cement pipe (transite pipe) must be performed by a Florida-licensed Asbestos Abatement Contractor. Use of compressed air to clean transite pipes is prohibited. At no time should transite pipe or pieces be mixed in with fill.

D. Contractor must furnish all permits, labor, material, services, insurance, tools, equipment, and notifications in accordance with EPA, OSHA, State, and all other applicable agencies to handle and remove asbestos material. Specifically, refer to EPA 40 CFR Part 61.

E. All work involved in the removal, salvage or disposal of AC mains shall be the responsibility and at the expense of the Contractor.

F. All scrap AC shall be properly manifested and prepared for transport. The scrap material shall be delivered to a landfill permitted for disposal of non-friable asbestos containing materials.

G. Friable asbestos-containing materials are regulated as hazardous waste. A friable material is defined as material that can be crumbled, pulverized, or reduced to powder in the hand. AC water main piping is generally considered to be a non-friable material.

1. The Sarasota County Landfill will accept friable and non-friable asbestos-containing material under the following conditions:

   a. **Friable Asbestos** (any asbestos-containing materials that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure).

- Asbestos must be sprayed with water until wet, then double bagged, tied off, labeled and placed in a covered container.

b. **Non-friable Asbestos** (any asbestos-containing materials that remain solid when handled) –

- Asbestos must be sprayed with water until wet, and then placed in a covered container. Transite pipe shall be kept wet during all phases of removal. No visible emissions arepermitted.
- No asbestos will be accepted after 3 p.m. Monday-Friday, on Saturday or on holidays.
- Haulers must have the proper manifests and call 24 hours in advance.

2. At least ten (10) working days before actual removal, the Contractor or his designated subcontractor will complete a National Emission Standards for Hazardous Air Pollutants (NESHAP) "Notice of Renovation or Demolition" form. The contractor or his asbestos subcontractor will deliver these completed forms by hand or certified mail to the following agencies (facsimiles are not permitted). Haulers must submit a completed Waste Shipment Record to the following locations:

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Air Resources
Management 2600 Blair Stone Road
Tallahassee, FL 32399-2400

SARASOTA COUNTY AIR and WATER QUALITY
North County Air and Water Quality Protection
1001 Sarasota Center Blvd.
Sarasota, FL 34232
941-861-5000
Or
South County Landfill Administration
Office 4000 Knights Trail Road
Nokomis, FL 34275
941-861-5000

3. Method of payment: Cash, Visa, MasterCard and Discover or a Debit Card with a bank logo on it. They do not accept business or personal checks.

4. Important notice: If asbestos is being deposited in the Sarasota County Central County Solid Waste Disposal Complex (county landfill), a Waste Shipment Record (WSR) must accompany the load. Submit a copy of the WSR signed by the approved disposal facility to the Engineer within 35 days of shipment.

H. All loads may be subject to inspection by County personnel prior to admittance to the

landfill. Label each container with the name of the City and location at which the waste was generated. Transfer pipe directly from the trench into the lined container.

I. Label trucks used to transport asbestos-containing waste material during loading and unloading as follows (refer to 29 CFR 1910.145 (d)(4) for sign format).

DANGER ASBESTOS DUST
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 02920

TOPSOIL

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work of this Section consists of furnishing all necessary labor, equipment, material and transportation necessary to furnish, place and prepare topsoil ready for planting. Topsoil shall be required in areas where unsuitable material must be removed or as required in other sections in this specification.

1.2 QUALITY ASSURANCE

A. Certification: When requested, the Contractor shall provide the necessary certification topsoil conforms to these requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil shall be material obtained from stripping or excavation free of roots, brush, stumps or other debris and suitable for or capable of supporting the growth of grass or other plant life.

B. Topsoil shall be fertile, friable natural surface soil from well-drained sites. It shall be without admixture of subsoil and entirely free of roots, brush, stumps, or other extraneous matter and shall not be delivered while in a muddy condition.

C. Topsoil as delivered to the site shall have an acidity range of pH 5.0 to 7.0 and shall contain not less than 5 percent organic matter. Sufficient limerock screenings shall be added to all topsoil used to bring it within a range of pH 6.0 to 7.0. Topsoil sample tests, if required, shall be made at the discretion of the Engineer and City Project Manager.

PART 3 - EXECUTION

3.1 PREPARATION

A. Fine Grading: After structures and pavements are completed and piping trenches backfilled, the disturbed areas of the site shall be fine graded. Any lumber, undesirable materials and rocks larger than the 2 inch size shall be removed from the surface and the surface shall be prepared for topsoil. The completed surface shall be shaped and sloped to drain water away from the structures. The completed surface shall be within 0.1 foot of

the elevations shown on the Drawings, unless otherwise approved by the Engineer and City Project Manager.

3.2 PERFORMANCE

A. When topsoil material is available from the on-site excavation operations, the topsoil shall be placed to a depth of 4 inches in areas to be grassed or sodded in lieu of the fill material. Topsoil need not be compacted.

B. Topsoil shall be required in all landscape areas to a depth of 4 inches and shall not be compacted. Suitable topsoil material obtained from site by stripping or excavation may be utilized.

C. The completed surface shall be shaped and sloped to drain water away from the structures. The completed surface shall be within 0.1 foot of the elevations shown on the Drawings, unless otherwise approved by the Engineer and City Project Manager.

END OF SECTION

SECTION 02934

SODDING

PART I - GENERAL

1.01 WORK INCLUDED

A. The work specified in this section consists of the establishing of a stand of grass, within the areas indicated on the Drawings, by the furnishing and placing of grass sod, fertilizing, watering and maintaining the sodded areas to assure a healthy stand of grass.

1.02 SUBMITTALS

A. A certification of sod quality by the producer shall be delivered to the Engineer ten (10) calendar days prior to use.

PART 2 - PRODUCTS

2.01 GRASS SOD

A. Grass sod shall be F.D.O.T. Bahia Grass and shall be well matted with grass roots. The sod shall be taken up in rectangles, preferably 12-inch by 24-inch, shall be a minimum of 2-inches in thickness and shall be live, fresh and uninjured at the time of planting. It shall be reasonably free of weeds and other grasses and shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. The sod shall be planted as soon as possible after being dug and shall be shaded and kept moist until it is planted.

2.02 FERTILIZER

A. Commercial fertilizers shall comply with the state fertilizer laws.

B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid and (3) water soluble potash contained in the fertilizer.

C. The chemical designation of the fertilizer shall be 12-8-8. At least 50 percent of the phosphoric acid shall be from the normal super phosphate or an equivalent source which will provide a minimum of two units of sulfur. The amount of sulfur shall be indicated on the quantitative analysis cared attached to each bag or other container.

2.3 WATER FOR GRASSING

A. The water used in the sodding operations may be obtained from any approved spring, pond, lake, stream or municipal water system. The water shall be free of excess and harmful chemicals, acids, alkalies, or any substance which might be harmful to plant growth or obnoxious to traffic. Salt water shall not be used.

PART 3 - EXECUTION

3.01 PREPARATION OF GROUND

A. The area over which the sod is to be placed shall be scarified or loosened to a suitable depth and then raked smooth and free from rocks or stones. Where the soil is sufficiently loose, the Engineer, at his discretion, may authorize the elimination of ground preparation.

3.02 APPLICATION OF FERTILIZER

A. Before applying fertilizer, the soil PH shall be brought to a minimum range of 6.0-7.0.

B. The fertilizer shall be spread uniformly over the area to be sodded at the rate of 500 pounds per acre, by a spreading device capable of uniformly distributing the material at the specified rate. Immediately after spreading, the fertilizer shall be mixed with the soil to a depth of approximately 4-inches.

C. On steep slopes, where the use of a machine for spreading or mixing is not practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately 2-inches.

3.03 PLACING SOD

A. The sod shall be placed on the prepared surface, with edges in close contact and shall be firmly and smoothly embedded by light tamping with appropriate tools.

B. Where sodding is used in drainage ditches, the setting of the pieces shall be staggered so as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6-inches. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.

C. On steep slopes, the Contractor shall, if so directed by the Engineer, prevent the sod from sliding by means of wooden pegs driven through the sod blocks into firm earth, at suitable intervals.

D. Sod which has been cut for more than 72 hours shall not be used unless specifically authorized by the Engineer after his inspection thereof. Sod which is not planted

within 24 hours after cutting shall be stacked in an approved manner and maintained and properly moistened. Any pieces of sod which, after placing, show an appearance of extreme dryness shall be removed and replaced by fresh, uninjured pieces.

E. Sodding shall not be performed when weather and soil conditions are, in the Engineer's opinion, unsuitable for proper results.

3.04 WATERING

A. The areas on which the sod is to be placed shall contain sufficient moisture, as determined by the Engineer, for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least 2 weeks. Thereafter, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60 calendar days (or until final acceptance, whichever is latest).

3.05 MAINTENANCE

A. The Contractor shall, at his expense, maintain the sodded areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include repairing of any damaged areas and replacing areas in which the establishment of the grass stand does not appear to be developing satisfactorily.

B. Replanting or repair necessary due to the Contractor's negligence, carelessness or failure to provide routine maintenance shall be at the Contractor's expense.

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SECTION 03000

CONCRETE
(Site Work)

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work included under this section consists of furnishing all materials, forms, transportation and equipment, and performing all necessary labor to do all the plain and reinforced concrete work shown on the Drawings, or incidental to the proper execution of the work, or as herein specified.

B. Composition: Concrete shall be composed of cement, fine aggregate, coarse aggregate, and water, so proportioned and mixed as to produce a plastic workable mixture in accordance with all requirements under this section suitable to the specific conditions of placement.

1.2 SUBMITTALS

A. All materials specified shall be certified by the producer or manufacturer that the furnished material meets the specific requirements of the specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cement:

1. Cement for all concrete shall be domestic Portland cement that conforms to the requirements of ASTM Designation C 150, Type I, Type II or Type III. Type III cement for high early strength concrete shall be used only for special locations and only with the approval of the Engineer. Type II cement shall be used in the construction of sanitary sewer manholes, wet wells and pump stations.

2. Only one brand of cement shall be used in any individual structure unless approved by the Engineer. Cement which has become damaged, partially set, lumpy or caked shall not be used and the entire contents of the sack or container which contains such cement will be rejected. No salvaged or reclaimed cement shall be used.

B. Fine Aggregate: Fine aggregate shall conform to the requirements of Section 902, Article 902-1 of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", latest edition.

C. Coarse Aggregate: Coarse aggregate shall conform to the requirements of Section 901 of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", except that slag shall not be used and the gradation shall be grade 57 as approved by the Engineer.

D. Water: Water shall be taken from a potable water supply and shall be fresh, clean and free from injurious amounts of oil, acid, alkali or organic matter.

E. Admixtures: No admixtures shall be used except by specific approval of the Engineer. When approved, admixtures shall meet the following minimum standards.

1. Air entraining agent: ASTM C 260.

2. Water Reducing and Retarding Admixture: ASTM C 494, Type D and free of chlorides.

F. Membrane Curing Compound: Membrane curing compound shall conform to the requirements of AASHTO Designation M 148, Type 1-clear, or Type 2-white pigmented.

G. Expansion Joint Filler:

1. Preformed expansion joint filler shall be of the non-extruding and resilient bituminous type and conform to the requirements of AASHTO Designation M 213.

2. Expansion joint filler shall be gray neoprene sponge rubber that conforms to AASHTO Designation M 153, Type I.

H. Separation Board: Separation board shall be closed cell, non-extruding, PVC foam Grade #327 as manufactured by AC Horn, Inc., with a 20 psi maximum compressive strength to compress to 75% of thickness.

I. Membrane: Membrane shall be a 6 mil polyethylene film.

J. Reinforcing Steel:

1. Reinforcing steel shall conform to the requirements of ASTM Designation A 615, Deformed Grade 60, except where otherwise indicated.

a. The name of the manufacturer of the reinforcing steel shall be called out in the shop drawings together with a sketch showing the pattern of the deformation, including the mill mark.

b. Bar reinforcement shall be accurately fabricated in accordance with the latest CRSI Manual of Standard Practice. The Contractor shall have prepared and shall submit to the Engineer in sextuplicate, necessary shop drawings and bar lists. The Contractor shall be responsible for errors made in shop drawings even though approved by the Engineer.

2. Welded wire fabric for concrete reinforcement shall conform to the requirements of ASTM Designation A 185 and shall be formed with smooth cold-drawn wire.

3. Cold-drawn wire for spirals shall be plain and shall conform to the requirements of ASTM Designation A 82 with a minimum yield strength of 70,000 psi.

4. Bar Supports:

a. Bar supports for reinforcing steel shall conform to the requirements of CRSI Manual of Standard Practice, Chapter 3 and shall be of a height to furnish the concrete cover called for on Drawings. High chairs shall be furnished for bent or top bars in solid slabs. Bar supports to be in contact with exterior surfaces of concrete shall be Class C with plastic caps at least 1-inch in length on the leg tips, or Class E with stainless steel legs. Bar supports shall be spaced not more than 100 times the diameter of the bars to be supported, with not more than 1/4 spacing from the end of the supported bars to the first chair.

b. Bar supports for slabs on grade shall be plain concrete blocks, 3-inches high by 4-inches square with tie wires embedded in support. Concrete strength shall be at 3,000 psi at time of use.

K. Forms: Forms shall be of wood, steel or other approved materials. The sheeting for all exposed surfaces shall be 5-ply plywood, unless otherwise specifically authorized. Forms of like character shall be used for similarly exposed surfaces in order to produce a uniform appearance. Forming for exposed exterior concrete from 1-foot below finished exterior grade to top of structure shall be carefully fabricated so as to provide a smooth finish without defects. The type, size, shape, quality and strength of all materials of which the forms are made shall be subject to the approval of the Engineer. If it is his opinion that the interior surfaces of the forms are too irregular to produce the specified finish, they

shall be lined with smooth, dense, moisture resistant hardboard or other material of which he approves.

L. Non-shrink Grout: Non-shrink grout shall be nonmetallic, pre-mixed type and shall be Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Burke Non-Ferrous, Non-Shrink Grout or approved equal.

2.2 CLASSIFICATION AND STRENGTH OF CONCRETE

A. Class and minimum strength requirements for concrete shall be as tabulated below. Unless otherwise specified, Class B concrete shall be used.

B. Strength Requirements: Concrete class and strength shall meet the minimum compressive strength requirements at the age of 7 and 28 days as shown in the following table. The compressive strengths shall be as determined by standard laboratory cylinder tests in accordance with the procedure set forth in ASTM Designation C 31 and C 39. (See Article 3.03 of this Section for quantity and testing of cylinders.)

Compressive Strength in Pounds Per Square Inch

Class	For Design Purposes	3 Consecutive Cylinder Average		Low Cylinder	
		7 Days	28 Days	7 Days	28 Days
A	4000	2950	4250	2600	3750
B	3000	2100	3200	1850	2800
C	5000	1800	2700	1550	2300

2.3 PROPERTIES AND DESIGN OF CONCRETE MIX

A. Tests and Design Mix:

1. The Contractor, 30 days before the beginning of concrete work, shall advise the Engineer of the proposed sources of the materials, or ready-mixed concrete, which the Contractor intends to use in the work. A design mix which has been used by the concrete supplier before, may be submitted for approval provided the proportions and strengths meet the requirements of this specification.

2. The source and manufacturer of material after once having been approved shall not be changed by the Contractor, except as approved by the Engineer, and additional laboratory tests may be required by the Engineer to prove conformance with specification requirements.

3. If during the progress of the work, tests indicate that concrete is not being produced in accordance with these Specifications, the Engineer may order changes in the materials or their proportions so as to secure concrete as specified.

B. Slump: Slumps shall be as low as possible consistent with proper placing. Low slump concrete shall be used for footing and slabs on grade. Medium slump concrete shall be used for walls, columns and suspended slabs. Concrete shall conform to the limits specified in the following schedule:

Class of Concrete	Medium Slump	Low Slump
A	4 to 5 in.	2 to 3 in.
B	4 to 5 in.	2 to 3 in.
C	5 to 6 in.	3 to 4 in.

PART 3 - EXECUTION

3.1 PREPARATION

A. Concrete Mixing:

1. Equipment: The concrete shall be ready-mixed and the equipment shall conform to the applicable requirements of ASTM Designation C 94.

2. Measurement: Equipment necessary to positively determine and control the actual amounts of all materials entering the concrete shall be provided by the Contractor or the concrete manufacturer. All materials shall be measured by weight, except that water may be measured by volume. A bag of cement weighs 94 pounds.

3.2 INSTALLATION

A. Forms:

1. Construction:

a. Forms shall be built true to line and grade, and shall be mortar tight and sufficiently rigid to prevent displacement or sagging between supports. Particular attention shall be given to adequacy of supports and shoring, which is the Contractor's responsibility. The surfaces of forms used for permanently exposed surfaces shall be smooth and free from irregularities, dents, sags, or holes. Forms for surfaces to receive stucco finish shall be suitable for its application. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, all metal is at least 1 1/2 inch from any concrete surface. Form ties shall be removed immediately after removal of forms, and holes shall be thoroughly plugged with grout within 24 hours after form removal and kept damp for 4 days to prevent shrinking.

b. Wire ties will not be permitted. All forms shall be so constructed that they can be removed without hammering or prying against the concrete. Unless otherwise indicated, suitable moldings shall be placed to bevel or round exposed edges at expansion joints or at any other corners that are to remain. Beams below grade shall have forms at both sides.

2. Coating: Prior to the placing of steel reinforcement or concrete, forms for exposed surfaces shall be coated with a non-staining paraffin base oil or mineral oil. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before the placing of concrete.

3. Removal: Forms and/or form supports shall not be removed from any concrete until it has obtained sufficient strength to support itself and any live loads it may be subjected to, and then only with the approval of the Engineer.

B. Reinforcing Steel: When placed in the forms, reinforcement shall be clean and free of all rust, scale, dust, dirt, paint, oil or other foreign material and shall be accurately and securely positioned in the forms as shown on the Drawings before the placing of concrete. Reinforcing steel shall be wired or otherwise fastened together at intersections and shall be supported by concrete or metal supports, spacers or hangers. Bar supports, where adjacent to the ground, shall be set on precast concrete pads compressed into the subgrade. The Contractor shall obtain the Engineer's approval before fastening reinforcing steel at intersections by welding methods.

1. Splicing of reinforcement shall be held to a minimum and shall be placed at points of minimum stress. Bars shall be lapped at splices a minimum of 24 bar diameters unless otherwise shown on the Drawings or directed by the Engineer, and shall be rigidly wired or clamped.

2. Wire fabric shall be straightened before placing and shall overlap one full space of mesh at ends and edges and shall be securely fastened. Fabric shall be supported

so as to occupy its proper location in the concrete as shown on the Drawings. Fabric shall not cross any expansion joints.

C. Embedded Items: In addition to steel reinforcement, pipes, inserts and other metal objects as shown, specified or ordered shall be built into, set in or attached to the concrete. All necessary precautions shall be taken to prevent these objects from being displaced, broken or deformed. Before concrete is placed, care shall be taken to determine that all embedded parts are firmly and securely fastened in place as indicated. They shall be thoroughly clean and free from paint or other coating, rust, scale, oil, or any foreign matter. No wood shall be embedded in concrete. The concrete shall be packed tightly around pipes and other metal work to prevent leakage and to secure perfect adhesion. Drains shall be adequately protected from intrusion of concrete.

D. Separation Board: Two inch separation board shall be installed as indicated on the Drawings.

E. Concrete:

1. General: Reinforcement shall be secured in position, inspected and approved before placing concrete. Runways for transporting concrete shall not rest on reinforcing steel. Concrete not placed within 90 minutes from the time mixing is started will be rejected and shall be removed from the job by the Contractor. Concrete shall be deposited as nearly as practicable in final position. Concrete shall not be allowed to drop freely more than six feet. All concrete shall be placed in daylight and (except seal concrete) shall be placed in the dry unless otherwise authorized by the Engineer in writing.

2. Slabs Placed On Subgrade: Slab concrete placed on earth or fill subgrade shall be separated from direct contact with the subgrade by 6 mil polyethylene film or other approved material. Sidewalks and walkways will not require a separation sheet. Polyethylene film shall be lapped 4-inches on sides and 12-inches on ends.

3. Compaction: Concrete shall be compacted by internal vibrating equipment, supplemented by hand rodding and tamping as required. Vibrators shall in no case be used to move the concrete laterally inside the forms. Internal vibrators shall maintain a speed of at least 5000 impulses per minute when submerged in concrete. (At least one spare vibrator in working condition shall be maintained at the site during concrete placing operations.) Duration of vibration shall be limited to time necessary to produce satisfactory consolidation without causing segregation. Vibrator shall be moved constantly and placed in each specific spot only once.

4. Bonding: Before depositing new concrete on or against concrete that has set, the surfaces of the set concrete shall be thoroughly cleaned so as to expose the coarse

aggregate and be free of laitance, coatings, foreign matter and loose particles. Forms shall be retightened. The cleaned surfaces shall be dampened, but not saturated, and then thoroughly covered with a coat of cement grout of similar proportions to the mortar in the concrete. The grout shall be as thick as possible on vertical surfaces and at least 1/2-inch thick on horizontal surfaces. The fresh concrete shall be placed before the grout has attained its initial set.

5. Protection: Rainwater shall not be allowed to increase the ratio of mixing water nor to damage the surface finish. Concrete shall be protected from disfigurement, damage, vibration, internal fractures and construction overloads.

F. Curing:

1. All concrete, including gunite, shall be water cured by covering with a double thickness of clean burlap, cotton mats, or other approved material kept thoroughly saturated with water. The forms shall be kept wet until removed and upon removal, the curing specified herein shall be started immediately. Concrete shall be cured for a period of 7 days for normal Portland cement or 4 days for high early strength cement. Concrete poured in the dry shall not be submerged until it has attained sufficient strength to adequately sustain the stress involved nor shall it be subjected to flowing water across its surface until it has cured 4 days. Curing of gunite shall be started as soon as possible without damaging surface and not later than 2 hours after placing.

2. In lieu of wet burlap or cotton mats as specified above, concrete slabs may be covered with wet sand and kept moist for the specified curing period. The initial curing period of not less than 24 hours shall consist of the wet burlap or cotton mat method, then the wet sand method may be utilized until the end of the curing period.

3. Concrete surfaces which will not be coated, painted, plastered, stuccoed, covered with tile or floor covering or requiring a bonding surface may be cured by means of a membrane curing compound in lieu of the wet cure method. The curing compound shall be applied immediately after a satisfactory surface finish has been completed or forms have been removed. The rate of application of membrane curing compound shall be at least one gallon to every 200 square feet of exposed surface to be cured. The membrane curing compound and impervious covering shall be continuous and without defects and shall retain the required moisture in the concrete. Membrane curing compound that becomes damaged by rain, foot traffic or other conditions within 5 days of application shall be reapplied.

G. Finishes:

1. As soon as forms can safely be removed, all irregular projections shall be chipped off flush with the concrete surfaces. All voids produced by spacers or any honeycombing shall be pointed up with grout and troweled flush with the concrete surface immediately after removal of forms and water cured to prevent shrinkage. Honeycombing shall be cut out to expose a sound concrete surface prior to pointing. The use of mortar pointing or patching shall be confined to the repair of small defects in relatively green concrete. Where in the opinion of the Engineer substantial repairs are required, the defective concrete shall be cut out to sound concrete and repaired with gunite or the concrete shall be removed and reconstructed as directed.

2. Floor slabs shall be brought to a true and even finish by power or hand floating in a manner that will not bring excess fines to the surface. The consistency of the concrete shall be such that water does not accumulate at the surface. Unless otherwise shown on the Drawings, the surface shall be floated with a wood float and shall be steel troweled to a smooth finish. Troweling shall be the minimum to obtain a smooth, dense surface and shall not be done until the mortar has hardened sufficiently to prevent excess fine material from being worked to the surface. If so directed, the surface shall be brushed lightly with a push broom so as to produce a nonslip surface.

3. Concrete surfaces that are not exposed in the completed work will require no special finish other than such pointing up and rubbing as is necessary to leave them smooth and impervious.

4. Other surfaces which will be exposed in the completed work shall be finished by being rubbed smooth with a float and water or a carborundum brick. The final surface shall be smooth and dense, without pits, irregularities, blow holes or bubbles.

H. Grout:

1. Grout for pointing and patching shall consist of cement and fine aggregate mixed in the proportions used in the concrete and a minimum amount of water to produce a workable grout.

2. Material for grouting column base plates, anchor bolts, reinforcing bars, pipe sleeves and pump base plates shall be of the non-shrink type and shall be mixed and placed as recommended by the manufacturer. Machinery set on grout pads shall not be operated until the grout has cured for at least 24 hours.

3.3 FIELD QUALITY CONTROL

A. General: The quality of the concrete as to conformance to the specifications is the entire responsibility of the Contractor until it is accepted in place in the structure and verified by the final cylinder tests made by the laboratory. Arrangements for field testing shall be made by the Contractor with the laboratory as selected by the Owner.

B. Compressive Tests: Standard laboratory compressive test cylinders will be obtained by the laboratory when concrete is discharged from the mixer at the site of the work. A set of 3 cylinders will be obtained for each 60 cubic yards or fraction thereof placed each day, for each type of concrete. The cylinders will be cured under laboratory conditions and will be tested in two groups of three at 7 and 28 days of age, respectively.

C. Slump Tests: The laboratory of the Owner or their representative will make slump tests of Class A and Class B concrete as it is discharged from the mixer at the site of the work. Slump tests will be made for each 25 cubic yards or "pour" of concrete placed. Slump tests may be made on any batch and failure to meet specified slump requirements will be sufficient cause for rejection of that batch.

D. Reports: Proper reports of all tests performed by the laboratory will be prepared by the laboratory and submitted promptly to the Engineer. Such reports shall be properly labeled so as to identify the portions of the project into which the materials have been placed.

END OF SECTION

SECTION 03600

GROUT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide all labor, materials, tools and equipment and perform all grouting as specified hereinafter and indicated on the Drawings.

1.2 RELATED WORK

A. Section 03000, Concrete

1.3 SUBMITTALS

A. Submit manufacturer's literature for review on the following items:

1. Non-shrink grout data including grout properties, mixing, surface preparation and installation instructions.

2. Mix design for clarifier basin grout.

1.4 DELIVERY AND STORAGE

A. Deliver and store grouting materials in unbroken containers with seals and labels intact as packaged by the manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Non-shrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Euclid NS Grout, or engineer-approved alternative pre-mixed type.

B. Non-shrink Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embeco 636 Grout pre-mixed type, or engineer-approved alternative.

C. Epoxy Grout: Sikadur 42 Grout-Pak, or engineer-approved alternative, for grouting sleeves for anchor bolts, etc.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean all bonding surfaces of dust and oil.

3.2 INSTALLATION

A. Non-shrink Grout:

1. Use non-shrink, nonmetallic grout for grouting precast concrete wall panel connections, column base plates, anchor bolts, reinforcing bars, pipe sleeves, machinery supports and pump base plates. Use epoxy grout for anchor bolts, etc., where indicated on the Drawings.

2. Mix and place non-shrink grout as recommended by the manufacturer.

3. Mix grout as close to the work area as possible and transport quickly to its final position in a manner which will not permit segregation of materials.

4. Cure non-shrink grout with water saturated burlap for at least three days or with an application of Super Rez Seal cure and seal compound applied immediately after grout placement.

5. Do not operate machinery set on grout pads until the grout has cured for at least 24 hours.

END OF SECTION

SECTION 15100

VALVES, SERVICES AND APPURTENANCES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and complete and ready for operation all valves and appurtenances shown on the Drawings and as specified herein.

B. All valves and appurtenances shall be of the size shown on the Drawings. Insofar as possible, all equipment of the same type shall be from one manufacturer.

C. All valves and appurtenances shall have the name of the maker and the pressure for which they are designed cast in raised letters some appropriate part of the body.

D. The equipment shall include, but not be limited to, the following:

1. Resilient wedge gate valves
2. Ball valves
3. Valve boxes
4. Valve Tags
5. Tapping Sleeves
6. Service Saddles
7. Backflow Prevention Devices
8. Meter Accessories
9. Fire Hydrants
10. Brass Pipe and Fittings
11. Insert Valve

1.2 DESCRIPTION OF SYSTEMS

A. All of the equipment and materials specified herein are intended to be standard for use in chlorinated potable water, reclaimed water or wastewater.

B. Valves and appurtenances for use with potable water shall be NSF-61 certified.

C. All buried valves shall have polyethylene encasement as specified in Sections 02614.

1.3 QUALIFICATIONS

A. All of the types of valves and appurtenances shall be products of well established firms, who are fully experienced, reputable and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these Specifications, as applicable.

1.4 SUBMITTALS

A. Complete shop drawings of all valves and appurtenances shall be submitted to the Engineer for review, in accordance with the requirements of the General Conditions.

1.5 TOOLS

A. Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

1.6 VALVE INDICES

A. The Contractor shall be responsible for furnishing tags for all valves required on the work and installing the tags required for his own work. Tags on above ground valves shall be noncorrosive metal or plastic, 2 inches in diameter, 19 gauge thick. Tags for buried valves shall be secured to a concrete base as shown on the Drawings. Submit to the Engineer for approval, two (2) samples of each type of tag proposed and manufacturer's standard color chart and letter styles. Tags shall have stamped on them the information shown on the Drawings and the data described herein

PART 2 – PRODUCTS

2.1 RESILIENT WEDGE GATE VALVES

A. All gate valves 4" to 24" in diameter shall be resilient wedge, manufactured to meet or exceed the requirements of AWWA C509 or AWWA C515 of latest revision and in accordance with the following Specifications. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of

the valve.

B. The valves are to be non-rising stem with the stem made of cast, forged or rolled bronze shown in AWWA C509. Two stem seals shall be provided and shall be of the O-ring type, one above and one below the thrust collar.

C. The sealing mechanism shall consist of a cast iron gate having a vulcanized synthetic rubber coating, or natural rubber seat ring. The resilient sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

D. The valve body, bonnet, and bonnet cover shall be cast iron ASTM A126, Class B. All ferrous surface inside and outside shall be meet AWWA C550 fusion-bonded epoxy coating. A handwheel or wrench nut shall be provided for operating the valve. All Valves are to be tested in strict accordance with AWWA C509.

E. Valves shall be manufactured by American Flow Control Series 2500, Mueller A2360/A2361, or equal.

F. Valves shall open left (counter clockwise)

G. Bonnet hex head nuts and bolts shall be 304 stainless steel (no socket head bolts allowed). Brass nuts shall be used with packing gland bolts if required for OS&Y valves.

H. Buried Valves:

1. In-line valves shall have mechanical joint ends in accordance with ANSI/AWWA C111/A21.11.

2. Tapping valves shall have flanged end with raised male face, conforming to MSS SP-60, for connection to the tapping sleeve; and a mechanical joint connection on the outlet side of the valve. Flange end bolting shall be 304 stainless steel.

3. The valves are to be non-rising stem with the stem made of copper alloy in accordance with AWWA C515. Two stem seals shall be provided and shall be of the O-ring type, Nitrile Buna- N or EPDM rubber, one above and one below the thrust collar.

4. Provide two-inch square operating nut.

5. Provide bevel gear for valve when shown on the drawings or when necessary to allow using a valve box in locations where depth of bury is limited.

I. Above Grade Valves:

1. Provide with Flanged ends that are in accordance with ANSI/AWWA C110/A21.10(ASME B16.1, Class 125).

2. The valves are to be non-rising stem with the stem made of copper alloy in accordance with AWWA C515. Two stem seals shall be provided and shall be of the O-ring type, Nitrile Buna- N or EPDM rubber, one above and one below the thrust collar. Valves in master meter assembly shall be outside screw-and-yoke (OS&Y) with rising stems.

3. Provide with hand wheel operator.

2.2 BALL VALVES

A. Stainless steel ball valves shall be of 2-piece (1" and smaller) or 3-piece (1-1/2" and larger) construction. Valves shall be rated for 150 psi saturated steam pressure and 400 psi WOG pressure. Valves shall have stainless steel body, stainless steel ball, replaceable Teflon or TFE seats and seals, blowout proof stem and vinyl covered steel handle. All end connections shall be threaded.

B. All valves shall be mounted in such a position that valve position indicators are plainly visible when standing on the floor.

C. Valves shall be manufactured by Jamesbury or equal.

2.3 VALVE BOXES

A. All buried valves shall have cast-iron three-piece valve boxes and rated H-20 loading. Valve boxes shall be provided with suitable heavy bonnets and to extend to such elevation at or slightly above the finished grade surface, as directed by the Engineer or Owner's Representative. The barrel shall be two-piece, screw type, having 5-1/4-inch shaft. The upper section shall be complete with cast iron covers.

B. All valves shall have actuating nuts extended within 12 inches of the top of the valve boxes. Valve boxes shall be provided with concrete base and valve nameplate engraved with lettering 1/8-inch deep as shown on the Drawings.

C. Valves for reclaimed water shall be rectangular as shown on the Drawings.

D. Valve box covers shall indicate the type of service "Water", "Reclaimed Water" or "Sewer".

2.4 VALVE TAGS

A. Valve Identification Disk: Solid cast bronze, three (3) inch diameter with integral anchor pin for embedment in concrete. Anchor shall be suitable for securing to a concrete base in theft or tamper proof manner. Surface of disk shall be engraved with 1/4" to 3/8" capital letters and numbers, approximately 0.015 inch depth, as shown in City of Venice detail drawing. Surface shall be ground smooth and epoxy- coated to prevent tarnishing.

B. When connecting above ground water main piping to existing water or wastewater plant piping, the Contractor shall furnish valve tags for all new valves required on the work. Tags on the above ground valves shall be noncorrosive metal or plastic, 2 inches in diameter, 19 gauge thick. Tags shall have stamped on them the valve size, service, and ID number unless otherwise shown on the drawing details.

2.5 TAPPING SLEEVES

A. Tapping sleeves shall be constructed of epoxy-coated ductile iron. All tapping sleeves shall be suitable for tapping ductile iron pipe, C-900 PVC pipe, asbestos cement pipe and all pipe manufactured in accordance with ANSI A21 Standard.

B. All tapping sleeves shall be split sleeve design with one half containing the outlet half of the sleeve, the hub, and the other half completing the encompassing effect of the sleeve, the back. A 3/4-inch NPT test plug shall be provided on the outlet throat of the sleeve for pressure testing the sealed sleeve at 150 psi prior to tapping the pipe. All tapping sleeves shall allow a full size cutting head to pass through the outlet of the hub. All bolts joining the two halves of the sleeve shall be high strength, low alloy steel in accordance with Section 11-6.5 of AWWA C-111, latest edition.

C. All tapping sleeve connection flanges shall be a 150 lb flange joint with a counter bore per MSS SP-60 dimensions.

D. Tapping sleeves shall seal to the pipe by the use of a confined "O" ring gasket around the tap opening between the sleeve and pipe or by a full circumferential gasket between the sleeve and pipe.

E. Mechanical joint tapping sleeves shall, after bolting the halves together, form a mechanical joint at each end of the sleeve. The sleeve shall then be sealed to the pipe by assembling the mechanical joint using split gaskets and follower glands.

F. All tapping sleeves shall be Ford FTSC, JCM 432, or equal.

2.6 SERVICE SADDLES

A. Service saddles shall be used for all taps less than 4". For services 4" and larger,

a tee shall be cut into the main. Direct tapping of the pipe is not permitted.

B. Service saddles for pipe less than 3-inches shall be a single band which is hinged or split from the saddle body and is anchored by bolting one or more bolts between the band and saddle body or a double strap design anchored by four bolts.

C. Service saddles for pipe greater than 3-inches shall use a double band, with a minimum of a four bolt pattern anchoring unless otherwise noted on the Drawings. These service saddles shall provide for a variable range in diameter per nominal size of pipe.

D. All service saddles shall be constructed from epoxy coated ductile iron with stainless steel bands and shall seal to the distribution pipe by a synthetic or natural rubber gasket. The gasket shall maintain a resilient seal without cracking or becoming brittle during the work life of the service saddle. Gasket shall be of self-sealing design.

E. Saddle assembly should be capable of pressure up to 150 psi without rupture or failure.

F. All service saddles shall have corporation tap threads.

G. Service saddles shall be Ford FC101, FC202, FDC101, or FDC202.

2.7 BACKFLOW PREVENTION DEVICES

A. Backflow prevention devices (Reduced Pressure Zone (RPZ) or Dual Check Valve Assemblies) shall be furnished and installed as required by the City's most recent Cross-Connection Control Program CCCP.

B. An approved backflow prevention assembly shall be provided which incorporates a resilient seated, full flow shut-off valve situated before and after the applicable backflow preventer. Test ports shall be resilient seated and located to allow for in-line testing.

C. Dual Check Valve Assemblies shall be ASSE certified Apollo model DUCLF4N-lead free and be supplied with two independent spring actuated check valves.

D. Reduced Pressure Zone (RPZ) Assemblies shall be an ASSE certified lead free model manufactured by Zurn Wilkins and be supplied with two independently operating spring loaded check valves on either side of a hydraulically dependent relief zone. RPZs shall also contain resilient seated shut off valves upstream and downstream of the check valves with seated test cocks.

E. Backflow prevention devices shall be the same size as the meter, where applicable. If no meter is provided, the backflow prevention device shall be the same size as the service line.

2.8 METER ACCESSORIES

A. Curb Stops for connection to water meters shall be all brass in accordance with AWWA Standard C-800 for 300 psi operating pressure and shall be of sizes required and/or noted on the Drawings. Curb stops shall be provided with lock wing cast on stop body and operating tee cap to provide for locking the stop in closed position. Provide tubular stainless steel insert stiffener for connection to polyethylene service tubing. Curb stops shall be Ford model B43-444W, pack joint type.

2.9 FIRE HYDRANTS

A. Comply with provisions of AWWA C-502 (Dry Barrel Fire Hydrants), latest revision.

B. The drain outlet for the hydrant shall be eliminated as part of the casting or machining process, or must be completely plugged with a bronze plug.

C. Hydrant shall deliver at least one thousand (1,000) gallons per minute through the pumper nozzle with the pressure head loss through the hydrant not exceeding 3.6 psi.

D. The Contractor shall be responsible for confirming the depth of the water main and ordering the barrel length required to mount the hydrant at the proper height.

E. Hydrants shall be American B-84-B-5, Mueller Super Centurian Model A423 or equal with breakaway feature.

2.10 BRASS PIPE AND FITTINGS

A. Brass pipe and nipples shall be threaded schedule 40 red brass (ASTM B43). Brass nipples, caps, plugs, tees, bends, and bushings shall be manufactured of brass, cast and machined in accordance with AWWA Standard C-800 (ASTM B62 85-5-5-5). All threads shall be standard iron pipe thread conforming to ANSI B.1.20.1.

B. All pipe fittings and accessory components in contact with potable, raw, or reclaimed water shall comply with NSF Standard 61 requirements. Certification of these standards must be available.

C. Couplings for joining brass pipe or fittings to PVC or service line piping shall be brass in accordance with AWWA Standard C-800 with end connections

appropriate to the pipe and/or fittings being joined. Couplings shall be as manufactured by Ford or McDonald.

D. Provide tubular stainless steel insert stiffeners with all connections to polyethylene service tubing.

2.11 INSERT VALVE

A. The insert valve shall provide a means to install a permanent block (open-close) resilient valve into a pressurized pipe with no interruption of flow through the pipe and no reduction of line pressure. The insertion of the valve shall be accomplished through a single circular hole cut (under full line pressure) into the top of the pipe. The inserted valve shall permanently remain in the piping to allow shutdowns in the same manner as anyvalve.

B. The Contractor shall furnish all equipment, materials and labor for installation of the insert valve.

C. The inserted valve shall consist of three subassemblies: the Valve Body, which shall be mounted pressure-tight around the main; the Valve Cartridge, which shall be inserted, under full line pressure, into the Valve Body; and the Cartridge Closure Flange, which shall secure and permanently seal the Cartridge to the Body.

D. The valve body, saddles, bolting lugs and suds and nozzle shall be manufactured of type 304L stainless steel.

E. Test and maximum operating pressures shall be: Test pressure: 225 psi, Working pressure: 150 psi.

F. The contractor shall confirm the material and size of the existing pipe prior to ordering the insert valve.

G. In order to provide compatibility with existing City equipment, insert valves shall be as manufactured by Team or EZ, no substitutions.

PART 3 – EXECUTION

3.1 INSTALLATION

A. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Owner, Owner's Representative or Engineer before they are installed.

B. Buried Valves

1. Valve stems shall be vertical.

2. Provide bevel gear actuators for large valves to allow use of valve box when depth of bury is limited.

3. The Contractor shall provide, install, and test tapping valves and sleeves. Taps on all mains shall be made by the Contractor in the presence of the Owner's Representative.

4. Buried valves, including tapping valves and sleeves, shall be wrapped with polyethylene encasement material before backfilling.

C. Valves above grade or in vaults

1. Position valve with the actuator in the position indicated by the drawings; or positioned to be accessible from the floor, vault access, or cabinet opening. Valve position indicators shall be plainly visible when standing on the floor or ground surface.

D. Check Valves

1. Install check valves of the type and at the locations shown in the drawings.

2. Unless otherwise specifically shown by the drawings or directed by the Engineer, check valves shall be installed in horizontal runs of pipe with shaft on the top side.

3. Contractor shall carefully plan the positioning of check valve in pipeline so that the final installed position of the check valve provides free and unobstructed movement of the outside lever and weight.

E. Valve Boxes

1. Place valve box over each stem with base bearing on compacted fill and top flush with final grade. Valve box shall be aligned vertically and plumb over the valve operating nut.

2. Base of valve box shall be positioned to just cover the top of the valve but not rest directly on the valve. Inserting a PVC riser pipe between valve and valve box base is not acceptable.

3. Boxes shall have sufficient bracing to maintain alignment during backfilling.

4. Prior to acceptance by the Owner, Contractor shall remove any sand or other undesirable material from the box.

F. Fire Hydrants

1. Hydrants shall be installed plumb at the heights shown on the Drawings.

2. Hydrants shall be installed with the pumper nozzle facing the road.

3. Following installation, hydrants shall be painted with a compatible polyurethane coating system. Color shall be chosen by the Owner.

G. Backflow Prevention Devices

1. Backflow prevention devices shall be installed by a licensed plumber in accordance with the manufacturer's specifications and the City's CCCP and Standard Details.

2. Devices must be installed directly downstream of the water meter prior to any branches or tees.

3. RPZs must be tested and certified by a licensed backflow testing professional prior to activation in accordance with the City's CCPG and Section 01030 and the test report submitted to the City Utilities Department. Dual check valves do not need to be tested.

H. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, the Contractor shall check all plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of the structures.

3.2 INSPECTION AND TESTING

A. Valve and service components shall be inspected for damage and shall be repaired to the satisfaction of the Engineer before they are installed.

B. Completed pipe, valves and service lines shall be subjected to a hydrostatic pressure and leakage test in accordance with specification Section 02622 – PVC – Pipe and Fittings. All leaks shall be repaired and lines retested. Prior to testing, the pipelines shall be restrained to prevent movement during tests. If any joint, connection, or device proves to be defective, it shall be repaired or replaced to the satisfaction of the Engineer.

C. After installation of tapping sleeve and tapping valve, but before the existing main is tapped, Contractor shall subject the completed assembly to a hydrostatic pressure test in accordance with technical specification Section 02622 – PVC Pipe and Fittings. The test shall be witnessed by the Owner's Representative.

D. After installation of fire hydrant assemblies, Contractor shall notify Engineer that the assembly is complete and ready to be flow tested. Owner will flow test hydrant. Contractor shall keep hydrant assembly wrapped in plastic or other suitable material until the water main to which it is connected is disinfected and cleared for service by the Health Department. After the water main is placed into service, and the Owner has flow tested the hydrant, the hydrant shall be painted by the Contractor and a blue reflective marker shall be installed in the roadway.

END OF SECTION