SECTION 01000
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</table>
SECTION 01010
SUMMARY OF WORK

The project includes the construction of a storm drainage system along the Vinland Road and Peregrine Avenue, consisting of concrete pipe, manholes, ditch bottom inlets, curb inlets, and a mitered end section. The project also includes the removal of existing potable water lines and construction of new potable water lines along the project corridor.

The project also includes the construction of concrete curb and gutter, handicap ramps, and new sidewalk. The roadways will be milled and resurfaced at intermittent locations. Other items may also be included as shown on the drawings and specified in the Contract Documents. The Contractor is responsible to obtain a dewatering permit.
SECTION 01014

CONSTRUCTION SEQUENCE

The sequence of construction proposed by the Contractor shall be such which allows the storm sewer system to function at all times. Additionally, due to the expected high water table, the Contractor shall not construct the storm sewer system along Peregrine Avenue during the wet season. Wet season shall be considered from June to September.
SECTION 01021
SOILS REPORTS AND OTHER INFORMATION

I. SCOPE

A. Information on soils tests, reports and drawings, relating to existing subsurface conditions, existing surface and sub-surface structures, and Underground Facilities owned by the City at the project site may be provided by this Section subject to the provisions of Article 4 of the General Conditions.

II. INFORMATION PROVIDED


Copies of the report are available for review or purchase at the City of Orlando Public Works Department, Records Room, Eighth Floor, City Hall during regular business hours. This information may be purchased for a non-refundable fee of $5 plus tax or may be downloaded from the City’s eSupplier website at the following web link: https://esupplier.cityoforlando.net/vendor/common/default.aspx.

-END-
SECTION 01045
CUTTING AND PATCHING

I. SCOPE OF WORK

A. Preparation of work plans and execution of cutting and patching operations of non-structural and structural elements of unexposed or exposed items. The Contractor shall be responsible for all cutting, fitting and patching, including inspection and attendant excavation and backfill, required to complete the Work or to:

1. Make its several parts fit together properly.
2. Uncover portions of the Work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove samples of installed work as required for testing.
5. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.
6. Cut and patch structural work in a manner with prior approved in writing by the ENGINEER.
7. Cut and patch pre-operational and operational elements or systems is a manner with prior approval in writing by the ENGINEER.
8. Cut and patch work which is exposed on exterior or exposed in occupied spaces of building in a manner resulting in no reduction of visual qualities or resulting in substantial evidence of cut-and patch work, both as judged solely by the ENGINEER.

II. IMPLEMENTATION

A. SUBMITTAL

1. Submit a written request to the ENGINEER at least seven (7) days prior to executing any cutting or alteration which affects:

   a. Work of the CITY or any separate contractor.
   b. Structural value or integrity of any element of the Project.
   c. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
   d. Efficiency, operational life, maintenance or safety of operational elements.
   e. Visual qualities of sight-exposed elements.

2. Request shall include:
a. Identification of the project.

b. Description of affected work.

c. Date and time the work will proceed.

d. The reason for cutting, alteration or excavation.

e. Effect on the work of CITY or any separate contractor, or on the structural or weatherproof integrity of the affected area and project.

f. Description of proposed work:
   i. Scope of cutting, patching, alteration, or excavation.
   ii. Trades who will execute the work.
   iii. Products and methods proposed to be used.
   iv. Extent of refinishing to be done.

g. Alternatives to cutting and patching.

h. Cost proposal, when applicable.

i. Written permission of any separate contractor whose work will be affected.

B. MATERIALS

Comply with specifications and standards approved by CITY for each specific product involved.

C. INSPECTION

1. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.

2. After uncovering work, inspect conditions affecting installation of products, or performance of work.

3. Report unsatisfactory or questionable conditions to ENGINEER in writing; do not proceed with work until ENGINEER has provided further instructions.

D. PREPARATION

1. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.

2. Provide devices and methods to protect adjacent portions of project from damage.

3. Provide protection from the elements for that portion of the project which may be exposed by cutting and patching work; and maintain excavations free from water.

E. EXECUTION

1. Engage original Supplier to perform cutting-and-patching of structural work and operational
or pre-operational systems, or, if not available, engage only recognized experts. Perform alterations using only methods approved by ENGINEER.

2. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

3. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

4. Execute the fitting and adjustment of products to provide a finished installation in accordance with specified products, functions, tolerances and finishes.

5. Restore work which has been cut or removed, or install new products to provide completed work in accordance with requirements of the Contract Documents.

6. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

7. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
   a. For continuous surfaces, refinish to nearest intersection.
   b. For an assembly, refinish entire unit.

F. Pavement Restoration

1. Existing paving, including under drains if any are encountered and broken into, shall be restored by the CONTRACTOR and shall be replaced or rebuilt using the same type of construction as was in the original. CONTRACTOR shall be responsible for restoring all such work, including subgrade and base courses where present. CONTRACTOR shall obtain and bear the expense of such local or other governmental permits as may be necessary.
SECTION 01050
SURVEYING AND FIELD ENGINEERING

I. SCOPE OF WORK

A. Provide surveying and field engineering services for the Project:

1. Professional surveying and mapping work required for execution of the contract, including verification of existing survey data, construction layout, and production of the As-Built Survey.

2. Civil, structural or other professional engineering services required by the Contract Documents or as required in order to execute the CONTRACTOR’S construction methods.

B. Survey Services

CONTRACTOR shall retain the services of a registered Surveyor and Mapper, who is licensed in the State of Florida and approved by the CITY SURVEYOR, to provide professional surveying and mapping services to maintain survey control, layout and stake the Work and perform the As-Built Survey during construction.

C. Field Engineering Services

1. Design for construction drawings (such as design of shoring, protection of existing structures and bracing for formwork) shall be designed, signed and sealed by a professional engineer licensed in the State of Florida.

2. When requested by the CONSTRUCTION MANAGER or as specified in the Contract Documents, inspections or tests shall be performed under the supervision of a licensed professional engineer. The licensed professional engineer shall sign and seal these inspections or tests.

II. IMPLEMENTATION

A. Qualifications of Surveyor and Mapper or Engineer

1. The Florida Licensed Professional Engineer(s) or Florida Registered Surveyor and Mapper(s), who are proposed by the CONTRACTOR to provide services for the Project, are subject to the approval of the ENGINEER and the CITY SURVEYOR. Prior to any services being performed, the CONTRACTOR shall submit the name and address of any proposed registered professional and a written acknowledgement from the Surveyor and Mapper stating that he has the hardware, software and adequate scope of services in his agreement with the CONTRACTOR to fully comply with the requirements of this specification. These submittals shall be provided to the CONSTRUCTION MANAGER prior to Notice to Proceed. It is recommended that the Surveyor and Mapper attend the Preconstruction meeting. It is mandatory that any Surveyor and Mapper who has not previously performed work for the City in the past attend the Preconstruction meeting.

2. The Florida Licensed Professional Engineer shall be qualified in the discipline required for the specific services required for the Project.
B. Project Survey Requirements

1. Locate, reference and preserve existing horizontal and vertical control points and property corners shown on the Drawings prior to starting any construction Work. If the Surveyor and Mapper performing the Work discovers any discrepancies that will affect the Project, the CONTRACTOR must immediately report these findings to the CONSTRUCTION MANAGER and the CITY SURVEYOR. All survey work shall meet the requirements as defined in Florida Administrative Code 61G17-6. Reference and preserve all survey points during construction. If survey points are disturbed, it is the responsibility of the CONTRACTOR'S Surveyor and Mapper to reset the points at the CONTRACTOR'S expense. Copies of the Surveyor and Mapper’s field notes and/or electronic files for point replacement shall be provided to the CITY SURVEYOR through the CONSTRUCTION MANAGER.

   a. The Surveyor and Mapper shall locate all improvements for the Project As-Built Survey using State Plane Coordinates as the horizontal datum and the benchmark referenced on the Drawings as the vertical datum. The CITY will provide electronic files of the Drawings to be used by the Surveyor and Mapper in complying with these specifications.

   b. The construction layout shall be established from the reference points shown or listed on the Drawings. The accuracy of any method of staking shall be the responsibility of the CONTRACTOR. All construction layout staking shall be done such as to provide for easy verification of the Work by the CITY. Maintain stakes and or markings on the ground identifying the stations for the construction baseline at minimum 100-foot intervals or as required by the CONSTRUCTION MANAGER during construction.

2. Use survey control points to layout such work tasks as the following:

   a. Clearing, grubbing, work limits, right-of-way lines and easements.

   b. Foundations, column locations and all work associated with structures.

   c. Locations for pipelines and all associated structures and appurtenances.

   d. Road work:

      i. Stakes for grading, fill, curbs, radii, sidewalks and all other work requiring specific horizontal and or vertical alignment.

      ii. Gravity utility pipe slope and invert elevations to assure precise location.

   e. Locations and elevations required for any other Project work.

   f. A registered Surveyor and Mapper shall reference and replace any Project control points, boundary corners, benchmarks, section corners, and GIS monuments that may be lost or destroyed, at no additional cost to the CITY. Establish replacement points based on the original survey control or as directed by the CITY SURVEYOR. Copies of all reference field notes and/or electronic files for point replacement must be submitted to the CITY SURVEYOR through the CONSTRUCTION MANAGER.

3. Accuracy of all constructed improvements shall be within 0.125 feet (±1.5”) horizontally and 0.0417 feet (±1/2”) vertically of the location depicted on the Drawings, unless a more stringent requirement is stated elsewhere in the Contract Documents, in which case the more stringent requirement shall take precedence. Notwithstanding the above, these construction tolerances do
not change the requirement for the improvement’s proper function or design intent. The tolerance for all slopes of Improvements specified in the Plans shall be within 10% of the proposed design slope, unless a more stringent requirement is stated elsewhere in the Contract Documents, in which case the more stringent requirement shall take precedence. The CONTRACTOR shall require the Surveyor and Mapper to include a statement on the As-Built Survey that all constructed improvements are within the specified tolerances unless specifically noted as not being within the construction tolerance. These variances shall be brought to the Owner’s attention with an asterisk and note next to the as-built information shown on the As-Built Survey.

4. As-Built Survey Requirements

a. The CONTRACTOR shall require the Surveyor and Mapper to locate all improvements for the Project As-Built Survey using State Plane Coordinates and the vertical datum referenced on the Drawings. The CONTRACTOR shall obtain an electronic copy of the Drawings from the CITY for use as a base for the As-Built Survey. The As-Built Survey shall clearly show the designed and constructed locations and elevations information for ease of comparison. This shall be accomplished by adding the As-Built information on a separate CAD level or layer, while keeping all the design call-outs and construct requirements visible. The As-Built information shall be labeled as such and be shown with a bolder text weight in order to be easily identifiable. The As-Built Survey shall include all storm and sanitary sewers and structures, clean-outs, potable and reclaimed water mains, meters, valves, force mains, gas mains, irrigation lines (2-inch and larger), process piping, electric and communication duct banks, traffic and pedestrian signals, pull boxes, cabinets, transformers, structures, drainage conveyance systems, retention ponds, fences, pavement, curbs, sidewalks, driveways, relocated utilities, appurtenances and buildings. All planned improvements referenced by station and offset on the Plans, shall also be referenced on the As-Built Survey in the same manner. All constructed improvements that have location and/or elevation information called-out on the Plans, shall have the same information identified on the As-Built Survey. If a structure information table was provided on the Plans, then the As-Built information shall be shown in the table. Design call-outs shall have a thin strike line through the design call-out and all As-Built information must be labeled (or abbreviated “AB”) and be shown in a bolder text that is completely legible. Pavement and drainage flowline elevation shots shall be taken at minimum 25’ intervals and grade breaks. As-Built Survey shots shall be taken at the same locations as shown on the Plans for ease of comparison. Any variations from required material sizes or types shall also be noted.

b. The CONTRACTOR shall submit a copy of the current monthly updated As-Built Survey (“Progressive As-Built Survey”) signed and sealed on each page and also submit identically matching electronic files in PDF format and the same CAD file format as the original design. The Progressive As-Built Survey shall be submitted to the CONSTRUCTION MANAGER with each Application for Payment and indicate the horizontal and vertical locations of all constructed improvements to date with sufficient information and notes to easily determine if the improvements were constructed in conformance with the Contract Documents. The Progressive As-Built Survey submittals shall include a cover sheet and include the surveyor’s statement regarding the constructed improvements being within the specified tolerances or if not indicating the variances, as described above in paragraph II.B.3. The CONTRACTOR’s submission of a Progressive As-Built Survey or Final As-Built Survey, as applicable, acceptable to the CONSTRUCTION MANAGER and CITY SURVEYOR, with its Application for Payment, is a condition precedent to the ENGINEER’s payment recommendation to the City pursuant to Article 14 of the General Conditions. If no construction has been performed during the period, the CONTRACTOR shall provide documentation of such in accordance with the requirements of the CONSTRUCTION MANAGER.
c. The CONTRACTOR shall submit a minimum of three (3) signed and sealed sets of the final As-Built Survey incorporating all Work performed under the Contract Documents ("Final As-Built Survey") with the Application for Final Payment, as well as identically matching electronic files in PDF format and the same CAD file format as the original design (Microstation or AutoCAD). Electronic file submittals that have more than one file or a file for each plan sheet shall have an index and/or a logical filename containing a description of the file’s contents. The final conformed Drawings shall be used as the basis for the As-Built Survey. The sets shall be in design plan format containing a complete set of all of the original plan sheets. The Surveyor and Mapper shall only sign and seal those sheets containing As-Built Survey information. Failure to provide accurate survey information in the proper format requested may result in the CITY determining the As-Built Survey is incomplete.

d. At Final Completion of the Project, the CONTRACTOR shall submit field mark-up drawings showing all other constructed improvements not included in the As-Built Survey as required above. This includes improvements such as, but not limited to, irrigation lines smaller than 2-inch, sprinkler heads, miscellaneous wiring, site furnishings and traffic control loops, and only applies to variations from what is shown on the Drawings. These mark-up drawings shall be compiled on a clean set of the original Drawings.

e. If unidentified utilities (not shown on the Drawings) are encountered during the installation of the Work, their horizontal and vertical location shall be included in the As-Built Survey. Provide the name and type of utility, the size and material type of pipe, conduit or structure and if known, the status (active or inactive) of the utility.

f. The CONTRACTOR shall submit documentation to verify the accuracy of field surveying work at the request of the CONSTRUCTION MANAGER or CITY SURVEYOR.

g. The CONTRACTOR shall submit certificate(s), signed by a licensed Professional Engineer or Registered Surveyor and Mapper, certifying that elevations and locations of improvements are in conformance with the Contract Documents, or, if not in conformance, certify as to variances from the Contract Documents.

-END OF SECTION-
### SECTION 01070

**ABBREVIATIONS AND SYMBOLS**

#### 1.1 ABBREVIATIONS

A. Common abbreviations which may be found in the Specifications area:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Symbol(s)</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>alternating current</td>
<td>a-c</td>
<td>maximum</td>
</tr>
<tr>
<td>ante meridiem</td>
<td>a.m.</td>
<td>mercury</td>
</tr>
<tr>
<td>ampere</td>
<td>A</td>
<td>milligram</td>
</tr>
<tr>
<td>average</td>
<td>avg</td>
<td>milligrams/liter</td>
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<td>biochemical oxygen demand</td>
<td>BOD</td>
<td>millimeter</td>
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<td>brake horsepower</td>
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<td>million gallon</td>
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<td>British thermal unit</td>
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<td>day</td>
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<tr>
<td>cubic inch</td>
<td>ci</td>
<td>number</td>
</tr>
<tr>
<td>cubic foot</td>
<td>cf</td>
<td>National Pipe</td>
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<tr>
<td>cubic yard</td>
<td>cy</td>
<td>Threads</td>
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<td>cfm</td>
<td>ounce</td>
</tr>
<tr>
<td>cubic feet per second</td>
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</tr>
<tr>
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<td>db</td>
<td>parts per million</td>
</tr>
<tr>
<td>degree Centigrade (or Celsius)</td>
<td>C</td>
<td>plus or minus (±)</td>
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<tr>
<td>direct current</td>
<td>d-c</td>
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<tr>
<td>figure</td>
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<td>square foot</td>
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<tr>
<td>flange</td>
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<tr>
<td>foot-pound</td>
<td>ft-lb</td>
<td>square yard</td>
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gallons per minute  gpm  standard cubic feet  scfm
gallons per second  gps  per minute
gram  g
Hertz  Hz  total dynamic head  TDH
hour  hr  totally-enclosed-fan-cooled
horsepower  hp
inch  in.  volt  V
inch-pound  in.-lb
inside diameter  ID
kilovolt-ampere  kva
kilowatt  kw
kilowatt-hour  kwh
linear foot  lf
liter  l

1.2  ORGANIZATION ABBREVIATIONS

A. Abbreviations of organizations which may be used in these Specifications are:

AASHTO  American Association of State Highway and Transportation Officials
ACS  American Chemical Society
ACI  American Concrete Institute
AGMA  American Gear Manufacturers Association
AICHE  American Institute of Chemical Engineers
AISC  American Institute of Steel Construction
AISI  American Iron and Steel Institute
ANSI  American National Standards Institute
APHA  American Public Health Association
AREA  American Railway Engineering Association
ASTM  American Society for Testing and Materials
ASCE  American Society of Civil Engineers
ASME  American Society of Mechanical Engineers
ASHRAE  American Society of Heating, Refrigerating and Air Conditioning Engineers
AWWA  American Water Works Association
AWS  American Welding Society
DIPRA  Ductile Iron Pipe Research Association
CRSI  Concrete Reinforcing Steel Institute
EPA  Environmental Protection Agency
FDOT  Florida Department of Transportation
FM  Factory Manual
HEW  Department of Health, Education and Welfare
HHS  Department of Health and Human Services
IEEE  Institute of Electrical and Electronic Engineers
IRI  Industrial Risk Insurance
ISO  Insurance Services Office
NAAMM  National Association of Architectural Metal Manufacturers
NARUC  National Association of Railroad and Utilities Commissioners
NEC  National Electric Code
NEMA  National Electrical Manufacturers Association
NFPA  National Fire Protection Association
NSF  National Sanitation Foundation
OSHA  Occupational Safety and Health Act
PCI  Precast Concrete Institute
SMACNA  Sheet Metal and Air Conditioning National Association
SSPC  Steel Structures Painting Council
UL  Underwriters Laboratories, Inc.
USGS  United States Geological Survey
USPHS  United States Public Health Service
WWEMA  Water and Wastewater Equipment Manufacturers Association
WPCF  Water Pollution Control Federation

1.3  LEGEND

A.  Legends of symbols used are shown on the Drawings and, in general, use of symbols is confined to the Drawings.

-END-
SECTION 01100

POLLUTION AND NOISE CONTROLS

I. SCOPE OF WORK

The elimination or minimizing of noise, vibration, and air pollution caused by construction activities. The controlling of the generation and disposal of solid and hazardous wastes.

II. IMPLEMENTATION

A. Criteria

1. Noise Control

Noise Control shall be in accordance with Federal, State, and City regulations. The contractor shall comply with all City Ordinances and regulations dealing with noise abatement.

2. Vibration Control

Vibration Control shall be in accordance with Federal, State, and City regulations. It is the Contractor's sole responsibility to prevent damage from vibration to adjacent structures and property.

3. Air Pollution Controls

Air Pollution Control shall be in accordance with Federal, State, and City regulations.

a. Fugitive Dust

i. Do not cause or allow the emissions of from any transport, handling, construction or storage activity to remain visible in the atmosphere beyond the property line of the emission source.

ii. Take precautions to minimize dust emissions from operations involving demolition, excavation, grading, clearing of land and disposal of solid waste.

iii. Do not cause or allow particulate matter to exceed 100 mg/m³ when determined as the difference between upwind and downwind samples collected on high volume samples at the property line for a minimum of five hours.

iv. Take precautions to prevent visible particulate matter from being deposited upon public roadways as a direct result of construction or hauling operations. Precautions shall include the removal of particulate matter from equipment before movement to paved streets, or the prompt removal of material from paved streets onto which such material has been deposited.

4. Solid and Hazardous Waste

Solid and Hazardous Waste Control shall be in accordance with Federal, State, and City
regulations. The contractor is solely responsible for the disposal of any hazardous waste that is generated by the contractor's operation.

B. Execution

In order to implement these regulations, CONTRACTOR shall use the following procedures and techniques:

1. Air Pollution
   a. Dust
      i. Cover loads of materials, debris and soil transported from construction sites.
      ii. Daily water down and sweep streets which have heavy volumes of construction vehicles carrying debris and excavated materials.
      iii. Establish regular cycles and locations for washing trucks which haul soil from the site.
      iv. Water down construction sites as needed to suppress dust, during handling of excavation soil or debris or during demolition.
   b. Burning of wastes on site is prohibited. Remove scrap and waste material and dispose of in accordance with laws, codes, regulations, ordinances and permits.
   c. Use construction equipment which has been designed and equipped to prevent or control air pollution in conformance with the regulations of the EPA, state and local authorities. CONTRACTOR shall have available evidence of such design and equipment shall be maintained and made available for inspection by CONSTRUCTION MANAGER.
   d. Establish and maintain records of the routine maintenance program for internal combustion engine powered vehicles and equipment used on the project. These records shall be held available for inspection by CONSTRUCTION MANAGER.

2. Solid and Hazardous Waste
   a. Solid wastes may be disposed of in a number of ways, including reuse on the project, sale for fuel, through controlled incineration, donation to other public private dump sites, either free or for a fee. The method of disposal is restricted according to the classification of the waste material by the CFR 40 - 190 to 399, and by local requirements.

   Hazardous material shall be disposed of in Class I or Class II-1 waste disposal facilities.
   b. Haul routes for transporting solid or hazardous wastes are subject to the approval of CONSTRUCTION MANAGER.

-END-
SECTION 01150
MEASUREMENT AND PAYMENT

PART 1 - GENERAL:

A. Payment for all work done in compliance with the Contract Documents, inclusive of furnishing all labor, equipment, materials, and performance of all operations relative to construction of the Work, will be made under the Pay Items listed on the Bid Form. Should the Contractor feel that the cost of any part of the Work has not been identified by an item on the Bid Form, the bidder shall include the cost of the work in some other applicable bid item, so that the proposal for the project reflects his total price for completing the Work in its entirety. Work performed by the Contractor outside the limits of construction or not required by the Contract Documents shall be at the Contractor's expense, unless approved by the Engineer in writing prior to construction.

B. The Owner reserves the right to modify work as may be necessary, and to increase or decrease quantities of work to be performed, including deduction or cancellation of any one or more of the Pay Items. Changes in the Work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. When changes result in changes in the quantities of the work to be performed, the Contractor will accept payment according to the unit prices that appear in the Bid Form, subject to the Contract Provisions.

C. The quantities for payment of unit price items under this Contract shall be determined by actual measurements of the completed items, ready for service and accepted by the owner, in accordance with the applicable unit of measurement. Contractor’s representative shall witness and verify all field measurements with the Owner’s representative before the preparation of the application for payment.

D. Division I of the FDOT Standard Specifications for Road and Bridge Construction (latest edition) are excluded from use on this Contract. The technical specifications in Division II- Construction Details and Division III-Materials are hereby included by reference with the exception that all FDOT methods of measurement and payment are specifically excluded from use on this Contract.

PART 2 – SPECIFIC PAY ITEMS:

1. Mobilization shall be paid according to Article 2.3.4 of the General Conditions. Payment includes the cost for preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, including permits and fees, and any other preconstruction expense necessary for the start of work, including construction schedule, preconstruction survey, preconstruction video and photographs, dewatering plan, shop drawings, work associated with contractor support during Owner/engineer testing,
reviews, and inspection, re-inspection and any rework resulting from same. Also included are temporary utilities/facilities, survey and layout safety equipment and all other items not specifically identified under other bid items which are necessary for the construction. Also included is compliance with administrative and regulatory requirements, provision of record drawings and closeout documents, demobilization, cleanup, removal of equipment, materials, supplies, and incidentals from the project site. Payment also includes project identification signs, to be approved by the City of Orlando. Payment will be made under Item No. 101-1 Mobilization – per lump sum.

2. **Bond and Insurance** shall be provided according to Article 5 of the General Conditions. Payment will be made under Item No. 101-2 Bond and Insurance – per lump sum.

3. **Maintenance of Traffic** shall be paid as a percentage of work completed during the pay period, and the total shall not exceed the lump sum bid pay item amount. The bid price and payment shall be full compensation for all materials, labor and equipment necessary for the initial installation and continual maintenance of traffic/pedestrian control devices, all temporary striping, removal of existing and temporary striping, special detours, commercial material for driveway maintenance, work zone signs, barrier walls, channelizing devices, temporary separators, arrow board/advance warning arrow panels, portable changeable message signs, temporary traffic detection and maintenance, and removable tape pavement markings during all phases of the work, as required by the maintenance of traffic plan and the Contract Documents. Payment will be made under Item No. 102-1 Maintenance of Traffic – per lump sum.

4. **Prevention, Control, and Abatement of Erosion and Water Pollution** shall be paid as a percentage of work completed during the pay period, and the total shall not exceed the lump sum bid pay item amount. The bid price and payment shall be full compensation for all materials, labor and equipment necessary for the initial installation and continual maintenance of all measures required by the SWPPP and the Contract Documents during all phases of the work. Payment will be made under Item No. 104 Prevention, Control and Abatement of Erosion and Water Pollution – per lump sum.

5. **Clearing and Grubbing** shall be paid as a percentage of work completed during the pay period, and the total shall not exceed the lump sum bid pay item amount. The bid price and payment shall be full compensation for all materials, labor and equipment necessary for complete removal and disposal of all vegetation, debris, trimming/protection/removal of trees, removal of existing fences and relocation or replacement with new fence, relocation of mailboxes, asphalt, curbs, sidewalks, driveways, drainage structures and pipes, utility structures and pipes, rock walls, and any other structures and obstructions in all areas where excavation is to be done, or where embankments or structures will be constructed to complete the work. This includes roadway area, ditch area borrow pits, and areas where culverts or pipe lines will be constructed. Payment will be made under Item No. 110-1-1 Clearing and Grubbing – per lump sum.

6. **Regular Excavation** shall be measured for payment by cubic yard completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary for grading of shoulders, graded road connections, slopes, compaction,
final dressing, embankment, excavation, replacement material, and all earthwork necessary to complete the project to lines and grades shown on the plans. Payment will be made under Item No. 120-1 Regular Excavation – per cubic yard.

7. **Type B, Stabilization (LBR 40)** shall be measured for payment by the square yard completed and accepted by the Engineer. The bid price and payment shall be full compensation for all work and materials specified in FDOT Section 160, including furnishing, spreading and mixing of all stabilizing material required and any reprocessing of stabilization areas necessary to attain the specified bearing value. The City will make full payment for any areas where the existing subgrade materials meet the design bearing value requirements without the addition of stabilizing additives, as well as areas where the Contractor may elect to place select high-bearing materials from other sources within the limits of the stabilizing. Any areas that are not feasible to stabilize and mix 12” deep, the Contractor may be allowed to substitute 50% more base thickness in place of stabilization at the same stabilization unit price. Payment will be made under Item No. 160-4 Type B, Stabilization, 12” – per square yard.

8. **Optional Base, Base Group 09** shall be measured for payment by the square yard completed and accepted by the Engineer. The bid price and payment shall be full compensation for all work specified in FDOT Section 285 including tack coat between base layers, prime coat, cover material for prime coat, bituminous material used in bituminous plant mix, and cement used in soil-cement. Payment will be made under Item No. 285-709 Optional Base, Base Group 09 – per square yard.

9. **Superpave Asphaltic Concrete, Traffic C** shall be measured for payment by the ton completed and accepted by the Engineer. The bid price and payment shall be full compensation for all labor, materials, and equipment specified under FDOT Section 334 (including the applicable requirements of FDOT Sections 320 and 330). Payment will be made under Item No. 334-1-13 Superpave Asphalt Concrete, Traffic C – per ton.

10. **Milling Exist. Asphalt Pavement, 1 1/2” Avg. Depth** shall be measured for payment by the square yard completed and accepted by the Engineer. The bid price and payment shall be full compensation for all work specified in FDOT Section 327 including hauling off and stockpiling or otherwise disposing of the milled material. Payment will be made under Item No. 327-70-6 Milling Exist. Asphalt Pavement, 1 1/2” Avg. Depth – per square yard.

11. **Asphalt Concrete Friction Course, Traffic C, FC-12.5, PG 76-22, ARB** shall be measured for payment by the ton completed and accepted by the Engineer. The bid price and payment shall be full compensation for all the work specified under FDOT Section 337 (including the applicable requirements of FDOT Section 320 and 330). Based upon the quality of the material, a pay adjustment will be applied to the bid price of the material as determined on a LOT by LOT basis. The pay adjustment will be assessed by calculating a Pay Factor for individual quality characteristics. The pay adjustment will be computed by multiplying a Composite Pay Factor for the LOT by the bid price per ton. Payment will be made under Item No. 337-7-74 Asphalt Concrete Friction Course, Traffic C, FC-12.5, PG 76-22, ARB – per ton.
12. **Inlets, Curb, Type J-4, >10’** shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the inlet per the plans and in accordance with FDOT Section 425, including but not limited to excavation, sheeting and/or shoring, dewatering, covers, grates, bolts, foundation preparation, connecting existing pipes, grout, drainage structure inverts, forms, concrete, curing, reinforcing steel, transverse beams, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site and all appurtenances to complete the project. Payment will be made under Item No. 425-1-442 Inlets, Curb, Type J-4, >10’ – per each.

13. **Inlets, Curb, J-6, >10’** shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the inlet per the plans and in accordance with FDOT Section 425, including but not limited to excavation, sheeting and/or shoring, dewatering, covers, grates, bolts, foundation preparation, connecting existing pipes, grout, drainage structure inverts, forms, concrete, curing, reinforcing steel, transverse beams, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site and all appurtenances to complete the project. Payment will be made under Item No. 425-1-462 Manhole, J-6, >10’ – per each.

14. **Inlets, Ditch Bottom, Type H, >10’** shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the inlet per the plans and in accordance with FDOT Section 425, including but not limited to excavation, sheeting and/or shoring, dewatering, covers, grates, bolts, foundation preparation, connecting existing pipes, grout, drainage structure inverts, forms, concrete, curing, reinforcing steel, transverse beams, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site and all appurtenances to complete the project. Payment will be made under Item No. 425-1-582 Inlets, Ditch Bottom, Type H, >10’ (Modified) – per each.

15. **Manholes J-8, >10’** shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the inlet per the plans and in accordance with FDOT Section 425, including but not limited to excavation, sheeting and/or shoring, dewatering, covers, grates, bolts, foundation preparation, connecting existing pipes, grout, drainage structure inverts, forms, concrete, curing, reinforcing steel, transverse beams, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site and all appurtenances to complete the project. Payment will be made under Item No. 425-2-92 Manhole, J-8, >10’ – per each.

16. **Mitered End Section, RCP, Round, 84” CD** shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the mitered end per the plans and in accordance with FDOT Section 430, including but not limited to excavation, sheeting and/or shoring, dewatering, covers, grates, bars, bolts, foundation preparation, grout, forms, concrete, curing, reinforcing steel, furnishing, placing and
compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site and all appurtenances to complete the project. Payment will be made under Item No. 430-982-147 Mitered End Section, Optional RD, 84” CD – per each.

17. **Pipe Culvert, PVC, Round, 3” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, PVC, Round, 3” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-103 Pipe Culvert, PVC, Round, 3” S/CD – per linear foot.

18. **Pipe Culvert, PVC, Round, 12” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, PVC, Round, 12” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-112 Pipe Culvert, PVC, Round, 12” S/CD – per linear foot.

19. **Pipe Culvert, RCP, Round, 18” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, RCP, Round, 18” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-118 Pipe Culvert, RCP, Round, 18” S/CD – per linear foot.

20. **Pipe Culvert, RCP, Round, 24” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, RCP, Round, 24” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-124 Pipe Culvert, RCP, Round, 24” S/CD – per linear foot.

21. **Pipe Culvert, RCP, Round, 54” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert,
RCP, Round, 54” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-154 Pipe Culvert, RCP, Round, 54” S/CD – per linear foot.

22. **Pipe Culvert, RCP, Round, 60” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, RCP, Round, 60” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-160 Pipe Culvert, RCP, Round, 18” S/CD – per linear foot.

23. **Pipe Culvert, RCP, Round, 66” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, RCP, Round, 66” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-166 Pipe Culvert, RCP, Round, 66” S/CD – per linear foot.

24. **Pipe Culvert, RCP, Round, 72” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, RCP, Round, 72” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-172 Pipe Culvert, RCP, Round, 72” S/CD – per linear foot.

25. **Pipe Culvert, RCP, Round, 84” S/CD** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the Pipe Culvert, RCP, Round, 84” S/CD per the plans and in accordance with FDOT Section 430 and 941. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 430-175-184 Pipe Culvert, RCP, Round, 84” S/CD – per linear foot.
26. **Concrete Curb and Gutter (Type E)** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct concrete curb and gutter per the plans and FDOT Sections 520 and 932. The unit cost also includes saw-cutting existing curb & gutter and all transitions. Payment will be made under Item No. 520-1-7 Concrete Curb and Gutter (Type E) – per linear foot.

27. **Concrete Curb and Gutter (Type F)** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct concrete curb and gutter per the plans and FDOT Sections 520 and 932. The unit cost also includes saw-cutting existing curb & gutter and all transitions. Payment will be made under Item No. 520-1-10 Concrete Curb and Gutter (Type F) – per linear foot.

28. **Concrete Curb (Type A)** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct concrete curb and gutter per the plans and FDOT Sections 520 and 932. The unit cost also includes saw-cutting existing curb & gutter and all transitions. Payment will be made under Item No. 520-2-1 Concrete Curb (Type A) – per linear foot.

29. **Concrete Curb (Type D)** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct concrete curb and gutter per the plans and FDOT Sections 520 and 932. The unit cost also includes saw-cutting existing curb & gutter and all transitions. Payment will be made under Item No. 520-2-4 Concrete Curb (Type D) – per linear foot.

30. **Concrete Sidewalk, 4” Thick** shall be measured for payment by square yard completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct 4” thick concrete sidewalk per the plans and FDOT Section 522. Payment will be made under Item No. 522-1 Concrete Sidewalk, 4” Thick – per square yard.

31. **Performance Turf (Sod)** shall be measured for payment by square yard completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary for furnishing, delivering, protecting, and installing sod, including site preparation, removal of undesirable plant species, soil amendment, application of fertilizer in accordance with City requirements and regulations, planting, watering, and other maintenance until final project completion. Payment will be made under Item No. 570-1-2 Performance Turf (Sod) – per square yard.

32. **Loop Assembly (F&I) Type F** shall be measured for payment by assembly completed and accepted by the Engineer. The bid price and payment shall be full compensation for each inductive loop detector and per assembly for loop assembly will include all equipment, materials as specified in the plans and FDOT Section 600, and all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation. Payment will be
33. **White/Red Retro-Reflective Pavement Markers** shall be measured for payment by per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all work as specified in the plans and FDOT Section 706. Payment will be made under Item No. 706-3 White/Red Retro-Reflective Pavement Markers, Yellow/Yellow Retro-Reflective Pavement Markers – per each.

34. **Yellow/Yellow Retro-Reflective Pavement Markers** shall be measured for payment by per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all work as specified in the plans and FDOT Section 706. Payment will be made under Item No. 706-3 White/Red Retro-Reflective Pavement Markers, Yellow/Yellow Retro-Reflective Pavement Markers – per each.

35. **Painted Markings, Standard, White, Solid, 6”** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new Painted Markings per the plans and in accordance with FDOT Section 710. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 710-11-120 Painted Markings, Standard, White, 6” – per linear foot.

36. **Painted Markings, Standard, White, Solid, 24”** be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new Painted Markings per the plans and in accordance with FDOT Section 710. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 710-11-125 Painted Markings, Standard, White, 24” – per linear foot.

37. **Painted Markings, Standard, White, Message** shall be measured for payment by per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new Painted Markings per the plans and in accordance with FDOT Section 710. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 710-11-160 Painted Markings, Standard, White, Message – per each.

38. **Painted Markings, Standard, White, Arrow** shall be measured for payment by per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new Painted
Markings per the plans and in accordance with FDOT Section 710. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 710-11-170 Painted Markings, Standard, White, Arrow – per each.

39. **Painted Markings, Standard, Yellow, Solid, 6”** be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new Painted Markings per the plans and in accordance with FDOT Section 710. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 710-11-221 Painted Markings, Standard, White, 6” – per linear foot.

40. **Painted Markings, Standard, Yellow, Solid, 18”** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new Painted Markings per the plans and in accordance with FDOT Section 710. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 710-11-224 Painted Markings, Standard, Yellow, 18” – per linear foot.

41. **Thermoplastic, Standard, White, Solid, 6”** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-11-121 Thermoplastic, Standard, White, 6” – per linear foot.

42. **Thermoplastic, Standard, White, Solid, 12”** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-11-123 Thermoplastic, Standard, White, 12” – per linear foot.
43. Thermoplastic, Standard, Yellow, solid, 6” shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-11-221 Thermoplastic, Standard, Yellow, 6” – per linear foot.

44. Thermoplastic, Standard, Yellow, Solid, 18” shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-11-224 Thermoplastic, Standard, Yellow, 18” – per linear foot.

45. Thermoplastic, Preformed, White, Solid, 12” shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-14-123 Thermoplastic, Preformed, White, 12” – per linear foot.

46. Thermoplastic, Preformed, White, Solid, 24” shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-14-125 Thermoplastic, Preformed, White, 24” – per linear foot.

47. Thermoplastic, Preformed, White, Message shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use
only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-14-160 Thermoplastic, Preformed, White, Message – per each.

48. **Thermoplastic, Preformed, White, Solid, Arrow** shall be measured for payment per each completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to apply new thermoplastic markings per the plans and in accordance with FDOT Section 711. The unit price shall also include full compensation for all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Use only materials listed on the FDOT’s Approved Product List (APL). Payment will be made under Item No. 711-14-170 Thermoplastic, Preformed, White, Arrow – per each.

49. **10” Ductile Iron Pipe** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the 10” ductile iron pipe per the plans. The unit price shall also include full compensation for excavation, sheeting and/or shoring, dewatering, filter fabric, concrete jacket, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing structures and grouting. Payment will be made under Item No. 1050-51-210 10” Ductile Iron Pipe – per linear foot.

50. **8” PVC Water Main Replacement** shall be measured for payment by linear foot completed and accepted by the Engineer. The bid price and payment shall be full compensation for all materials, labor and equipment necessary to construct the 8” PVC Water Main Replacement per the plans and in accordance with Orange County Utilities Standards and Construction Specifications Manual. The unit price under this section includes providing a complete system for a water transmission/distribution pressure piping and appurtenant items as well as excavation, sheeting and/or shoring, dewatering, furnishing, placing and compacting select bedding material, furnishing select material for backfill when suitable material is not available on-site, and connection to existing system. Payment will be made under Item No. 2000-001 8” PVC Water Main Replacement – per linear foot.

-End of Section-
SECTION 01200
PROJECT MEETINGS

I. SCOPE

A. CONSTRUCTION MANAGER will schedule and administer a preconstruction conference, periodic project meetings, and any specially called meetings throughout the progress of the Work. CONSTRUCTION MANAGER or its representatives will:

1. Prepare and distribute Notification of meeting to attendees for meetings.
2. Establish, prepare and distribute agenda with Notification.
3. Make physical arrangements for meetings.
4. Preside at meetings
5. Prepare and distribute minutes of meetings.

B. Representatives of CONTRACTOR, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

II. IMPLEMENTATION

A. Preconstruction Conference

1. The preconstruction conference will be scheduled by CONSTRUCTION MANAGER as outlined in the General Conditions.
2. Location: A central site, convenient for all parties, designated by CONSTRUCTION MANAGER.
3. Attendance (as applicable).
   a. CITY and CONSTRUCTION MANAGER representatives, and their professional consultants.
   b. DESIGN ENGINEER representatives and their professional consultants.
   c. CITY MBE/WBE representative.
   d. Other agency representatives (DER, EPA, City, County, etc.).
   e. CONTRACTOR's representative and CONTRACTOR's professional consultants.
   f. Contractors and Suppliers
   g. Others as appropriate

B. Project meetings.
1. CONSTRUCTION MANAGER will schedule regular meetings. The project meetings will be held every week and as required by progress of the work with the first meeting one week after the preconstruction meeting. CONSTRUCTION MANAGER will prepare and distribute the minutes of the meeting at least 24 hours prior to the next project meeting.

2. Location of the meetings: A central site, convenient for all parties, designated by CONSTRUCTION MANAGER.

3. Attendance:
   a. CONSTRUCTION MANAGER and other City Representatives as needed.
   b. CONTRACTOR and his consultants as needed.
   c. DESIGN ENGINEER and his professional Consultants as needed.
   d. Subcontractors as appropriate to the agenda.
   e. Suppliers as appropriate to the agenda.
   f. Others as appropriate.

5. CONTRACTOR's representative is to attend the project meetings and have the authority to act on behalf of the entity he represents on field related matters. CONTRACTOR's representative is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as minutes correction, deliveries of materials and equipment, progress of the Work, etc.

6. The CONTRACTOR is to provide a current submittal log at each progress meeting in accordance with the General Conditions.

7. The CONTRACTOR is to provide a two week schedule at each project meeting in accordance with the General Conditions.

C. Special meetings as may be called by CONSTRUCTION MANAGER.

1. Agenda: As necessary.

2. Attendance: As appropriate.

-END-
SECTION 01310
PROJECT SCHEDULING - MAJOR PROJECTS

I. SCOPE

A. This work shall consist of developing, maintaining and providing a detailed time-scaled, computer generated Progress Schedule using the Critical Path Method, which demonstrates complete fulfillment of all work shown in the Contract Documents. The Contractor shall regularly revise and update the Progress Schedule, using it in planning, coordinating, and performing all work. Schedule activities shall accurately depict the entire scope of Work to be performed to complete the project including, but not limited to, all activities of the Contractor, Subcontractors, consultants, the City, and others, as required. The accepted Project Schedule shall be called the Baseline Schedule.

The Baseline Schedule shall be used by the Contractor and the City to coordinate ongoing work activities and track schedule impacts resulting from unknown or unforeseen conditions, including but not limited to activities of the Subcontractors, fabricators, the City, and other involved State agencies, authorities, and other entities such as utilities and municipalities.

B. The Contractor shall prepare, furnish and maintain a computer-generated Baseline Schedule using the Critical Path Method (CPM), using software produced by the manufacturers of Primavera, Microsoft, or other City-approved commercial scheduling software program, capable of performing in accordance with all of the details in this specification.

II. DEFINITIONS

Activity – An element of work performed during the course of a project. An activity normally has an expected duration, and may have expected resource requirements. Each Activity shall have its own identifying number, and linked Activities shall be numbered in a manner as to provide consistency for the string of Activities. Activities are also referred to as tasks.

Actual Start date – The Actual Start date represents the point in time that meaningful work actually started on an activity.

Actual Finish date – At the activity level, the Actual Finish date represents the point in time that work actually ended on an activity. At the project level, the Actual Finish date represents the point in time that the Contractor completes all work on the project and it is accepted by the Engineer. This is also known as Substantial Completion.

Bid Date – The date the bids for the Project are opened by the City.

Constraint – A scheduling restriction imposed on the start or finish of an activity. Only contractual/owner-designated constraints are allowed unless specifically authorized by this specification or the Engineer.

Construction Schedule Delay – A construction schedule delay is defined as an event, action or factor that impacts the critical path of the construction schedule and extends the time needed for completion of the Project.

Critical Path – In the Project Schedule, the critical path activities shall be defined as those activities being on the longest path, containing the least amount of total float. The critical path will generally change from time to time as activities are completed ahead of, or behind schedule.

Critical Path Method (CPM) – A network analysis technique used to predict project duration by analyzing which sequence of activities (path) has the least amount of scheduling flexibility (least amount of float). A scheduling technique utilizing activities, durations, and interrelationships/dependencies (logic), such that all activities are interrelated with logic ties from the beginning of the Project to the completion of the Project.

Data Date – The date entered in the Project Details which is used as the starting point to calculate the...
applicable schedule. For the Baseline Schedule, the Data Date shall be the Contract Award Date; for Monthly Progress Schedule update submissions, the Data Date shall be the date up to which the Contractor is reporting progress (generally the last working day for the corresponding contract payment period).

**Duration** – Activity durations shall be entered as the number of working days (not including holidays or non-working periods) to complete the selected activity; for certain activities such as concrete curing, or others approved by the Engineer, durations may reflect actual calendar days.

**Final As Planned At Award Baseline Schedule** – The original plan against which the Contractor’s progress is measured. The Final As Planned at Award Baseline Schedule (Baseline Schedule) represents the original plan at the award of the contract, of what is expected to happen. Once the Baseline Schedule is accepted by the Engineer, it is saved and used as a basis to compare against Progress Schedule Updates.

**Float Suppression** – Utilization of zero free float constraints which allows an activity to start as late as possible by using its’ available free float. This technique allows activities to appear more critical than if the activity’s total float was based on early dates. Examples of float suppression techniques include preferential sequencing (arranging the critical path through activities more susceptible to City-caused delay), extending activities durations, incorporating several activities that actually require a half day or less effort with Finish to Start relationships but showing each as full day durations where one activity would be appropriate, manipulating calendars, or any other such methodology.

**Free Float** – The amount an activity can slip without delaying the immediate successor activities. Free float is the property of an activity and not the network path.

**Hammock Activity** – Activities grouped by a single activity, usually for the purpose of determining overall length of activity string.

**Initial Baseline Progress Schedule** – The Contractor’s schedule prior to submittal to the Engineer of the Final As Planned at Award Baseline Progress Schedule, reflecting the Contractor’s plan to proceed with Work during the time period while the final baseline schedule is still in the development, review, and acceptance process.

**Late Dates** – The latest an activity can start or finish without delaying the day of completion. Also known as “Drop dead dates”.

**Milestone** – A significant event, usually the beginning or end of a major stage or deliverable.

**Notice of Award** – The official written notice from the City to the Contractor notifying the Contractor that it has been awarded the Contract.

**Notice to Proceed** – The official written notice from the City to the Contractor notifying the Contractor of the date that it may begin Work. Contract Time is measured from this date.

**Predecessor** – An activity(s) that is required for the start of a given activity. Every activity must have a predecessor except for the first activity in the schedule.

**Progress Schedule Update** – Schedule that reflects the status of activities that have commenced or have been completed, including the following items: (a) actual activity start date and or completion date as appropriate; (b) actual remaining duration for activities commenced and not complete; (c) actual physical percent complete for activities commenced and not complete; and (d) actual activity suspend or resume dates for activities commenced and not complete.

**Recovery Schedule** – A schedule depicting the plan for recovery of significant time lost on the Project. This separate CPM schedule submission shall provide the resolution and include appropriate changes in network logic, calendar adjustments, or resource assignments.

**Relationships Between Activities**

**Finish to Start** – The successor activity can begin only when the current activity completes.
Finish to Finish – The finish of the successor activity depends on the finish of the current activity.

Start to Start – The start of the successor activity depends on the start of the current activity.

Start to Finish – The successor activity cannot finish until the current activity starts.

Schedule Revision – Revisions to the Baseline Schedule to ensure it accurately reflects the current means and methods of how the Project is anticipated to progress, including modifications made to activities in the current Baseline Schedule in any of the following items: (a) activity duration; (b) changes in logic connections between activities; (c) changes in constraints; (d) changes to activity descriptions; (e) activity additions or deletions; (f) changes in activity code assignments; (g) changes in activity resource assignments; and (h) changes in calendar assignments.

Substantial Completion - That date when (a) the Work (or a specified part thereof) is complete in accordance with the Contract Documents, with the exception of the minor items identified during the inspection described in the Contract General Conditions, and (b) the Work can be utilized for the purposes for which it is intended, as may be evidenced by successful completion of all specified pre-operational start-up and demonstration tests and receipt of a Certificate of Occupancy, if applicable to this Project. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Successor - An activity(s) that follows a given activity. Every activity must have a predecessor except for the last activity in the schedule.

Total Float – The amount of time an activity (or chain of activities) can be delayed from its early start without delaying the Contract completion date. Float is a mathematical calculation and can change as the Project progresses and changes are made to the Project plan. Total Float is calculated and reported for each activity in a network, however, Total Float is an attribute of a network path and not associated with any one specific activity along that path.

Working Day – A working day is a calendar day scheduled for active prosecution of the Work.

III. INTENT, RESPONSIBILITY, AND TIME

A. The Contractor shall schedule the Work using such procedures and staging/phasing in accordance with the Contact Documents. Work designated as part of separate stages may be performed simultaneously where provided in the Contract Documents or where approved.

B. The purpose of the Baseline Schedule shall be to: ensure adequate planning and staffing during execution of the Work by the parties to the contract; ensure communication and coordination of activities among all affected parties; assist the Contractor and the City in monitoring the progress of the Work, and evaluating proposed changes to the contract and/or entitlement to additional time for Project completion; establish a standard methodology for time adjustment analysis based on the principles of the Critical Path Method of scheduling, for use in time-related dispute resolution; and determine appropriate extensions or reductions of Contract Time.

C. The scheduling of activities is the responsibility of the Contractor. Therefore, it is the Contractor’s responsibility to determine the most feasible order of Work commensurate with the Contractor’s abilities and the requirements of the Contract Documents.

D. The intent of the review of the Baseline Schedule by the Engineer is for apparent compliance with the contract requirements for time and phasing. Review of the Baseline Schedule by the Engineer is not intended to consider the reasonableness of the Contractor’s plan. If, after the Baseline Schedule has been accepted by the Engineer, either the Contractor or the Engineer discover that any aspect of the schedule has an error or omission, the Contractor must correct it on the next Progress Schedule submission and note the changes in the Narrative Report.

E. Acceptance of the Baseline Schedule by the Engineer shall not be construed to imply approval of any particular construction methods or sequence of construction or to relieve the Contractor from its responsibility to provide sufficient materials, equipment, and labor to guarantee the completion of the contract in accordance with the contract documents.
F. Acceptance of the Baseline Schedule by the Engineer does not attest to the validity of assumptions, activities, relationships, sequences, resource allocations, or any other aspect of the progress schedule. Within the contractual constraints, the Contractor is solely responsible for the planning and execution of the work.

G. Acceptance of the Baseline Schedule by the Engineer shall not be construed to modify or amend the Contract Documents or the date of Substantial Completion.

H. Failure of the Contractor to include any element of the Work required by the Contract in the accepted Baseline Schedule does not relieve the Contractor from its responsibility to perform such work. Errors and omissions on schedules shall not relieve the Contractor from finishing all Work within the time limit specified for completion of the Contract.

I. The Progress Schedule shall include all Work contained in the Contract Documents and all Work directed in writing by the Engineer, and not be limited to Work on the initial critical path. The Progress Schedule shall reflect the actual dates that Work activities started and completed in the field. If a Work activity is suspended in the field and restarted at a later date, and the break between when the Work was suspended to when it was resumed is significant compared to the original activity duration, then the activity should be broken into multiple activities to reflect this discontinuity of the Work.

J. The Contractor shall ensure that Progress Schedules prepared by the Contractor for submission to the Engineer are in general compliance with the Contract Documents and requirements of this specification. Schedule submissions and accompanying narratives shall be timely, complete, accurate, and in compliance with the Contract.

IV. IMPLEMENTATION

A. The Baseline Schedule shall be prepared in the following stages:

1. Initial Schedule: The Contractor is encouraged, but not required, to submit an Initial Baseline Schedule that demonstrates a sample of how the Contractor’s proposed format and structure will conform to the detailed requirements of this section. The review and comment by the Engineer of the sample schedule should assist the Contractor in assuring the first submittal of the Baseline Schedule will be in general conformance with the requirements of the specification and other contract requirements, and that major rework of the Baseline Schedule will not be required. This submission shall reflect the Contractor’s anticipated plan to complete the Work in accordance with the Contract Documents, as envisioned by the Contractor at the time of the bid. This submittal may be made any time following notice to the Contractor that he/she is the anticipated low bidder for the Contract. Critical items for this submittal should include, but are not limited to: anticipated start dates, major milestones, activity descriptions, activity durations, activity relationships, summary activities, submittal times, etc. The Initial Baseline Schedule will not be considered part of the Baseline Schedule submittal.

2. Schedules submitted after the first Application for Payment shall be in accordance with all provisions of the General Conditions and the requirements contained in this Section. No work other than installation of the Engineer’s Field Office, mobilization, procurement and administrative activities, installation of construction signs, installation of erosion control and pollution protection, clearing and grubbing, field measurements, and survey and stakeout will be permitted to start until the Baseline Schedule has been submitted to the Engineer, and the Engineer determines there are no deficiencies consistent with those defined in paragraph E.1

3. Baseline Schedule: (As Planned at Award Baseline Schedule)

The Contractor shall ensure the schedule accurately reflects the proposed approach to accomplish the Work outlined in the Contract Documents and conforms to all requirements of this specification. The schedule shall define a complete logical plan that can realistically be accomplished to execute the Work in the Contract.
The schedule shall comply with the Work constraints and milestones defined in the Contract as well as other contractual terms and conditions. The schedule shall meet all interim milestone dates and shall not extend beyond the Substantial Completion date. The submission shall reflect the Contractor’s plan at the time of Contract Award, and prior to the start of any work. Negative float is not allowed in the Baseline Schedule.

During the course of contract execution, Total Float generated due to the efficiencies of either party (City or Contractor) will generally be considered Project Float and is not for the sole use of the party generating the float; rather it is a shared commodity to be reasonably used by either party. Any party assigned activity responsibility within the schedule has the full use of the Project Float until it is depleted.

However, if the Contractor submits a request for an Early Completion that includes a revised Progress Schedule supplemented with resource allocations for each task activity and time-scaled resource histograms that is accepted by the Engineer, then Total Float actually resulting from additional Contractor resources, additional work shifts, longer work weeks or adoption of more aggressive scheduling and construction management practices of the Contractor’s work activities may be considered Contractor Owned Float for the exclusive use of the Contractor.

Likewise, the City may accrue City Owned Float by generating Total Float through different means. This includes: change(s) to the Contract that relaxes restrictions on the Contractor or removes Contract Work; early completion of utility company activities; and early completion of the shop drawing reviews. City Owned Float is considered a resource for the exclusive use by the City. The Engineer documents City Owned Float by directing the Contractor to update the City Owned Float activity on the next Monthly Progress Schedule submission. The Engineer may use the City Owned Float to mitigate past, present, or future City delays by offsetting potential time extensions for contract change orders.

For either the City or the Contractor to reserve Total Float as City Owned Float or Contractor Owned Float, the party must document within the schedule submission narrative in advance of generating the Total Float the additional resources or measures that will be taken to shorten the Critical Path, and then document within the schedule submission narrative that immediately followed, when the Total Float was actually generated the City or Contractor Owned Float, based on entry of Actual Start and Actual Finish dates and percentage of work completed, and this must be agreed to by both parties in the next Progress Meeting. Without this timely documentation, any Total Float generated will be considered Project Float.

V. SUPPLEMENTARY REQUIREMENTS

A. The Contractor shall ensure the Baseline Schedule accurately reflects the proposed approach to accomplish the Work outlined in the Contract Documents and conforms to all requirements of this specification. The Baseline Schedule shall be submitted in the original scheduling software file format. Pdf format or scanned electronic submissions are not acceptable.

B. The Baseline Schedule shall define a complete logical plan that can realistically be accomplished, to execute the Work defined in the Contract.

C. The schedule shall comply with the Work constraints and milestones defined in the Contract as well as all other contractual terms and conditions. The schedule shall meet all interim milestone dates and shall not extend beyond the Substantial Completion date. The Baseline Schedule submission shall reflect the Contractor’s plan at the time of contract award, and prior to start of any work. No negative float is allowed in the Baseline Schedule submission.

D. Detailed Schedule Requirements – As a minimum, the Contractor shall address the following in the Baseline Schedule:
   a. Sufficient activities shall be included to assure that there is adequate planning for the entire Project. The appropriate number of activities will largely depend on the nature, size, and the complexity of the project. In addition to all of the site construction activities, network activities shall include: activities necessary to depict the procurement/submittal process including shop drawings and sample submittals, the fabrication and delivery of key and
long-lead procurement elements; settlement or surcharge period activities; sampling and testing period activities; cure periods; burn-in periods; activities related to temporary structures or systems; activities assigned to Subcontractors, fabricators, or suppliers; activities assigned to the City and other involved State agencies and authorities, including final inspection; activities to perform punch list Work; and activities assigned to other entities such as utilities, municipalities, County government/agencies, and other adjacent contractors. The Baseline Schedule shall indicate intended submittal dates, and depict the review and approval periods as defined in the Contract Documents for Department review.

b. Activity ID – Include a unique identification number for each activity. Activity ID numbers shall not be changed or reassigned.

c. Activity Name – Clearly and uniquely define each activity name with a description of the Work that is readily identifiable to inspection staff and the progress for each activity can be measured. Each activity shall have a narrative description consisting of a verb or work function (i.e. form, pour, excavate, grade, etc.), an object (i.e. slab, footing, wall, subgrade), and a location (i.e. station, bridge number, section, etc.). The Work related to each activity shall be limited to one Area of the contract, one stage of the contract, one phase of the contract, and one responsible party of the contract.

d. Milestone Activities – Include activities for all contract Milestones that define significant contractual events such as Contract Award, Notice to Proceed, Substantial Completion, Contract Completion, and coordination points with outside entities such as utilities, State and County agencies, Authorities, municipalities, Time-Related Contract Provisions, etc. All Milestone activities in that schedule shall be assigned a calendar that reflects work being allowed 365 days a year and 24 hours per day (i.e. curing calendar).

e. A “Contractor Start Work” start Milestone activity shall be included that has the actual date the Contractor started work authorized under the Contract.

f. Activity Durations – Define the Original Duration of each activity in units of whole Work days. Except submittal/procurement, curing, and burn-in activities, durations shall not exceed 30 work days unless approved by the Engineer. Durations for City submittal reviews shall meet requirements set forth in the Contract Documents. If requested by the Engineer, the Contractor shall justify the reasonableness of planned activity time durations.

g. Activity Relationships – Clearly assign predecessors and successors relationships to each activity, and assign appropriate logic ties between activities (Finish to Start, Start to Start, Finish to Finish, etc.) Do not have any open-ended activities, with the exception of the first and last activity in the schedule. An activity may only appear once as a predecessor or successor to another specific activity, but may be assigned as a predecessor or successor to many different activities. Do not include inappropriate logic ties with Milestone activities (i.e. a finish milestone activity and a predecessor assigned with a Finish to Start logic tie). Lag time may not exceed 10 days.

h. Activity Constraint Dates – The Contractor shall not have any constrained activities, except contractual dates, unless the Engineer accepts such constraints in writing.

i. Activity Dates – No Actual Start or Actual Finish dates shall be entered in the Baseline Schedule, except activities that were completed prior to the Contract Award.

j. Calendars – Use clearly defined calendars to account for contractually-defined, or anticipated shut-down periods (i.e. holidays, vacations, etc.). The Contractor shall identify the work days per week, holidays, number of shifts per day, and the number of hours per shift.

k. Clearly define significant interaction points between the Contractor, the City, and other entities including, but not limited to: Federal, State, and local agencies/authorities; and utilities. All activities of the City, utility companies, adjacent contractors, and other entities that affect the progress and influence any contract required dates including durations shall be shown in the schedule. This includes dates related to all permits and agreements. The schedule shall give special consideration to sensitive areas such as road closures and work restrictions, and shall indicate any time frames when work is restricted, as outlined in permits issued by regulatory agencies, and provided in the Contract Documents.

l. Activity Resources – Resource loading will be required. The City will assume when reviewing the Baseline Schedule that the Contractor’s resources are unlimited, unless the Contractor either assigns equipment, labor and material resources to each activity in the Baseline Schedule (and performs resource leveling), or indicates in the Baseline Schedule narrative what resource limitations are present. If the Baseline Schedule is not resource loaded, it is the Contractor’s responsibility to assure that the activity logic in the Baseline Schedule properly reflects any resource limitations. If the Contractor anticipates multiple
crews for the same schedule activity, those resources shall be documented in the Baseline Schedule narrative. As an activity can have only one responsible party, no activity shall involve multiple crews comprised of the Contractor and a Subcontractor, or multiple subcontractors.

m. Revenue Loading – The Contractor shall assign revenue amounts to all major activities, or groups of activities (i.e. pile driving by bent, embankment per area, etc.), so that the sum of the revenue amounts equals the Contract Value. This information will be used to produce a cash flow curve.

n. Activity Codes – The Contractor shall include a well-defined activity coding structure that allows project activities to be sorted and filtered. Activity codes shall include, but not be limited to: Responsible Party; Stage; Area of Work; Type of Work; Phase; and additionally as required by the Engineer to meet the needs of the specific contract work to facilitate the use and analysis of the schedule.

o. Activity Coding – For each activity, within the activity details the Contractor shall assign Activity Code values to identify the Responsible Party (i.e. Contractor, City, Utility, etc.) for the Work to be performed (only one responsible party shall be assigned to each activity), the Stage of the contract for the Work that will be performed, the Area where the Work will be performed, the Phase, and the Type of Work (i.e. procurement, embankment, paving, signage, etc.).

p. Narrative – Include a narrative in Microsoft Word, Adobe Acrobat or other City-approved format, that describes:
   - The Contractor’s general approach to construct the Work outlined in the Baseline Schedule. Address the reasons for the sequencing of Work and describe any resource limitations, potential conflicts, and other salient items that may affect the Baseline Schedule and how they may be resolved.
   - A list of activities with durations exceeding thirty (30) calendar days and a description of the reason why a duration of thirty (30) days or shorter is not appropriate.
   - A list of all lags used and the reason for each lag.
   - A list of all constraints and the justification(s) for Contractor imposed activity constraints proposed in the Baseline Schedule.
   - A list of calendars used in the Baseline Schedule and a description of the reason for use of each calendar.
   - Describe the project critical path and challenges that may arise associated with the critical path.
   - Anticipated coordination issues related to the Work activities by other entities that require additional information from or action by the Engineer.

E. Schedule Submission: Within fifteen (15) calendar days from Notice of Award, submit one hard copy and one electronic copy of the Baseline Schedule in a Critical Path Method (CPM) format for the Engineer’s review and acceptance. The electronic copy of the Baseline Schedule shall be the original scheduling software file. Pdf format or scanned copies are not an acceptable electronic format.
   a. The Engineer will review the Baseline Schedule and return it, accept it with comments, or reject it within fourteen (14) calendar days following the date of receipt of the Contractor’s submission.
   b. If the Baseline Schedule is returned with comments, the Contractor shall address all comments and revise the schedule as necessary. The Contractor shall complete the Baseline Schedule and obtain the acceptance of the Engineer within forty-five (45) days from Notice of Award.
   c. The Baseline Schedule must be “accepted” or “accepted as noted” by the Engineer prior to the City evaluating any Contractor disputes associated with time impacts. This does not preclude the Contractor from submitting a dispute while the Baseline Schedule is being reviewed for acceptance.
F. Monthly Progress Schedule Submissions – Following acceptance of the Baseline Schedule, the Contractor shall update the schedule using Actual Start and Actual Finish dates. The updated Baseline Schedule will be referred to as the Progress Schedule Update.
   a. First Monthly Progress Schedule Submission – Within three days following acceptance of the Baseline Schedule or the closing date for the first month’s contract payment period whichever is later, the Contractor shall perform a Progress Schedule Update to reflect the status of all activities where Work was performed in the time period between the start of work and acceptance of the Baseline Schedule. This shall include the actual dates entered in the Actual Start and Actual Finish columns, and percentage of Work complete for uncompleted activities, in addition the Contractor shall incorporate any Progress Schedule Revisions that reflect any changes in how future work activities are to be completed.
   b. Subsequent Monthly Progress Schedule Update Submissions – On a monthly basis, the Contractor shall submit a copy of the current Progress Schedule Update that includes all Schedule Revisions and Progress Schedule Updates to reflect the actual and planned prosecution and progress of the Contract Work. Progress Schedule Updates shall reflect the status of activities that have commenced or have been completed, including the following items: (a) actual dates in activity Actual Start and Actual Finish columns as appropriate; (b) actual remaining duration for activities commenced and not complete; (c) actual physical percent complete for activities commenced and not complete; (d) actual activity suspend or resume dates for activities commenced and not complete; and (e) Total Float for all activities. Schedule Revisions reflect modifications made to activities in the current project Baseline Schedule in any of the following items: (a) activity duration; (b) changes in logic connections between activities; (c) changes in constraints; (d) changes in activity descriptions; (e) activity additions or deletions; (f) changes in activity code assignments; (g) changes in activity resource assignments; (h) changes in calendar assignments; (i) changes in total float; (j) changes in critical path. When preparing a formal submission of the Progress Schedule Update, the Contractor shall make a copy of the current Progress Schedule and name it according to the file naming convention provided by the City.
   c. Additional Schedule Requirements – In addition to the schedule requirements detailed for the submission of the Baseline Schedule, the following shall be provided by the Contractor:
      i. Activities with suspended Work – When Work has been suspended on a schedule activity, the Engineer may require the Contractor to break that activity into two or more activities to accurately reflect the actual start and finish of that Work in the field and to more accurately reflect the relationship to other work activities.
      ii. Schedules will only be considered complete when all documents and data have been provided.
      iii. Schedules shall be submitted in acceptable electronic format, to the Engineer for review and acceptance. The Engineer may periodically request additional reports, graphs, etc., produced from the scheduling software. The Contractor will provide that data to the Engineer in a timely manner.
      iv. Use of Progress Override is not permitted. Only Retained logic will be permitted.

G. Progress Schedule Narrative – For each Monthly Progress Schedule submission, the Contractor shall submit a narrative in Microsoft Word, Adobe Acrobat or other City-approved format that includes, but is not limited to:
   a. The City project number, project name, project location, Contractor name.
   b. Current contract completion date, and schedule completion of all Project Work.
   c. Any contract interim Milestone dates, and scheduled start and finish dates for those Milestone activities.
   d. List all activities on the Critical Path (include Activity ID’s and descriptions) where Work is currently being delayed, and for each such activity, provide detailed information including:
      i. the events that caused the delay
      ii. the number of days the activity has been delayed (negative float)
      iii. the activities in the construction schedule affected by the events
      iv. the reasonable steps needed to minimize the impacts of the delay
   e. List all activities for procurement of long lead time materials that are behind schedule and the reason(s) why.
f. For major work items, describe the differences between the actual work performed and the work planned for the period as represented in the preceding Progress Schedule submission, including explanations for the deviations.

g. For all suspended work activities that could otherwise logically be progressed, detail the reason for suspension.

h. Description of any changes to the critical path since the last Monthly Progress Schedule submission and the impacts of such changes.

i. Explain changes in total float and logic ties, and reasons for and impact of all activities added or removed from the schedule.

j. List of all added or deleted activities and the reason for and impact of such changes.

k. List all changes in activity durations and the reason(s) for and the impact(s) of such changes.

l. List all changes in relationships between activities and the reason for and impact of such changes.

m. List any addition or deletion of activity or project constraints and the reason for and impact of such changes.

n. List all changes to the project calendars and the reason for and impact of such changes.

o. The major Work elements to be accomplished during the next monthly work period.

p. List all potential time delays and the activities that would be affected.

q. Provide a cash flow curve based on actual revenue earned.

The Engineer will prepare a written response to the Progress Review/Status Report and the Contractor’s Monthly Progress Schedule submission, accepting, accepting with comments, or returning for resubmission within five (5) calendar days following receipt of the Contractor’s submission. The Engineer’s review of Progress Schedule Updates is subject to the same terms identified for the Engineer’s review of the Baseline Schedule in Section III above.

H. The Contractor shall submit a Revised Baseline Schedule for review and approval by the Engineer for any of the following reasons:

a. The Engineer directs a change that affects the date(s) specified in the Agreement, or alters the length of the Critical Path. This submittal shall be provided within 15 calendar days from the date the Engineer requests the revision. Progress Payments will not be made until the submittal is accepted by the Engineer.

b. Contractor elects to change the sequencing so as to affect the length of the Critical Path in the accepted Progress Schedule.

c. The Engineer directs the Contractor to provide a Recovery Schedule. This submittal shall be provided within 15 calendar days from the date the Engineer requests the revision. Progress Payments will not be made until the submittal is accepted by the Engineer.

I. If, prior to agreement on an equitable adjustment to the Contract Time, ENGINEER requires revision to the Progress Schedule in order to evaluate planned progress, CONTRACTOR shall add activities showing the change effect(s) as directed.

-END-
SECTION 01370

SCHEDULE OF VALUES

I. SCOPE

A. In accordance with the General Conditions and this Section, Contractor shall prepare and submit a Schedule of Values. The Schedule of Values shall be used only as the basis of CONTRACTOR'S Application for Payment.

II. IMPLEMENTATION

A. SUBMITTALS:

1. CONTRACTOR shall submit Schedule of Values on forms provided by CITY, or if none provided on 8-1/2 inch by 14 inch white paper. Identify the schedule with:
   a. Contract Title and Project Name, if applicable.
   b. Name and Address of CONTRACTOR.
   c. Date of submission.

2. The Schedule of Values shall list items of Unit Price Work as listed on the Bid Form and incorporated in the Contract, with additional spaces for entry of actual quantity completed and price of Work completed.

3. The Schedule of Values shall list the installed value of the component parts of Lump Sum Work in sufficient detail to serve as a basis for computing values for Progress Payments during construction:
   a. The division of lump sum items into component parts shall be chosen to accommodate measuring actual progress in the field, such that progress measurement can be objective and verifiable. Appropriate units shall be used for each line item. For example, use units such as:
      - backfill - per cubic yard; sidewalk installed - per square foot; cable pulled - per linear foot; foundation pilings - each; etc.
   b. Identify each component part with the number and title of the respective major section of the Specifications. For each major component part list subcomponent values of major products, operations or work areas under the item.
   c. For each of the various component parts of the Work, include a directly proportional amount of CONTRACTOR's overhead and profit. No separate line items shall be allowed for CONTRACTOR's field or home office overhead or profit.

4. ENGINEER will review for approval and return Schedule of Values submittals in...
accordance with the General Conditions. If requested by ENGINEER, CONTRACTOR shall support amounts indicated on the Schedule of Values with data such as executed Subagreements, which will substantiate the correctness of the values, or revise values ENGINEER deems inappropriate.

5. CONTRACTOR shall revise and resubmit, and ENGINEER shall review for approval, the Schedule of Values to incorporate Change Orders executed by the CITY.

-END-
SECTION 01380
COLOR AUDIO/VIDEO DOCUMENTATION OF CONSTRUCTION AREA

Prior to beginning any construction, the Contractor shall prepare color audio/video documentation of all areas to be affected by or nearby the construction. The recorded documentation shall be submitted in DVD format that is acceptable to the Engineer.

The audio/video documentation shall be done within the two-week period prior to placement of materials or equipment in the construction area and furnished one week prior to the start of construction.

To preclude the possibility of tampering or editing in any manner, all video recordings must, by electronic means, display continuously and simultaneously recorded digital information on the video, including the date and time of recording. The time information shall consist of hours, minutes and seconds, separated by colons (i.e., 10:35:18).

The color audio/video recording shall consist of audio and video tracks that are recorded simultaneously. All tracks shall consist of original live recordings and thus shall not be copies of other audio and video recordings. The audio track shall contain a narrative commentary of what is being observed at the time of the recording.

Recorded coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio description. Audio description shall be made simultaneously with video coverage. Such coverage shall include, but not be limited to, all existing driveways, mailboxes, sidewalks, curbs, ditches, roadways, landscaping, trees, culverts, head walls and retaining walls, or buildings located within such zone of influence.

Houses and buildings shall be identified visually by house number, when visible, in such a manner that structures of the proposed system, i.e., manholes on a sewer system and hydrants on a water system can be located by reference. In all instances, locations shall be identified by audio or visual means at intervals not to exceed 100 lineal feet in the general direction of travel.

The rate of speed in the general direction of travel of the conveyance used during recording shall not exceed 48 feet per minute. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that playback will produce clarity of the object viewed.

All recording shall be done during times of good visibility. No recording shall be done during period of visible precipitation, unless otherwise authorized by the Engineer. The Owner shall have the authority to designate what are may be omitted or added for audio/video coverage.

When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than eight feet (8') to insure proper perspective.

In some instances, audio/video recording coverage will be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance.

END OF SECTION
SECTION 01400
TEMPORARY FACILITIES

I. DESCRIPTION

This section describes the CONTRACTORS responsibility for temporary facilities and utilities that the CONTRACTOR may require during construction.

II. SCOPE

A. Provide temporary facilities required which may include, but are not necessarily limited to, the following:

1. Telephone
2. Storage sheds
3. Temporary water service
4. Temporary sanitary service
5. Temporary lighting and electrical service
6. Temporary fire protection
7. Temporary office trailers (CITY and CONTRACTOR), including temporary utilities
8. Office trailer, furnishings, and equipment for the CITY’S job site management staff as included in the Special Provisions.
9. Safety and Visitor Protection

B. TEMPORARY WATER

1. Furnish and install temporary water service for use throughout construction period.
   a. Water for construction purposes.
   b. Water for other purposes:
      i. Testing
      ii. Temporary sanitary facilities
      iii. Cleaning
   c. Drinking water.

2. Maintain adequate volume of water for all purposes.

3. Provide separate supply of potable water. If supplied from CITY source, the system shall be protected by approved back flow devices.

4. Maintain strict supervision of use of temporary services:
   a. Enforce conformance with applicable codes and standards.
   b. Enforce sanitary practices.
   c. Prevent abuse of services.
   d. Prevent wasteful use of water.

5. Cost of Installation and Operation: Pay costs for temporary water supply used by all trades, including costs of installation, maintenance, and removal of pipe and equipment.

6. Requirements of Regulatory Agencies:
   a. Obtain, pay for permits, fees, deposits required by governing authorities.
b. Comply with federal, state and local codes.

C. TEMPORARY ELECTRICITY AND LIGHTING

1. Furnish, install and maintain adequate temporary lighting and electric power service for construction needs throughout construction period. **ALL TEMPORARY ELECTRICAL FACILITIES SHALL MEET THE REQUIREMENTS OF ALL PERTINENT BUILDING CODES.** The work may include the following:

   a. Power centers for miscellaneous tools and equipment used in construction work.
      i. Provide step down transformer(s) for converting the power supply to 120-volt power.
      ii. Provide circuit breaker protection for each outlet.
      iii. Provide equipment grounding continuity for entire system.
      iv. Users shall provide grounded, UL approved extension cords from power center to point of operations.
      v. Comply with N.E.C. regarding ground fault protection.

   b. Power for testing and checking equipment and systems.

   c. Power for welding units and for other equipment having special power requirements.

   d. Emergency power for those situations involving work on existing facilities where loss of construction power would be detrimental to the facility.

2. Capacity:

   a. Adequate electrical service distribution for construction use by all trades during construction period.

   b. Notify CITY if unusually heavy leads, such as welding and other special power requirements, will be connected.
      i. Provide special circuits for heavy load requirements.
      ii. Do not overload any circuit.

3. Power Source:

   If required, provide a minimum 120-volt, single-phase, 60 hertz electric power service to the site.

4. Maintain strict supervision of use of temporary services.

   a. Enforce conformance with applicable standards.
   b. Enforce safe practices.
   c. Prevent abuse of services.

5. Pay costs of, installation, maintenance and removal of temporary electrical services used.

6. Requirements of Regulatory Agencies:
a. Obtain and pay for permits as required by governing authorities.

b. Comply with applicable codes.
   
   i. National Electrical Code.
   iv. Federal, state and local codes and utility company regulations.

7. Provide night security lighting at secured areas within construction limits at offices, storage facilities and excavated areas.

D. TEMPORARY SANITARY FACILITIES

1. Furnish, install and maintain temporary sanitary facilities for use throughout construction period.

   a. Potable water for construction personnel:
      
      i. Portable containers to dispense drinking water.

   b. Enclosed toilet facilities for construction personnel. Separate facilities will be provided for men and women

2. Minimum number of fixtures:

   a. Toilets and Urinals:
      
      i. For less than 20 employees; 2 toilets and 1 urinal. One toilet will be dedicated for use by women workers on the job site.
      ii. For a work force having more then 20 employees; An additional 1 toilet and 1 urinal per 20 workers. This may be adjusted based on the number of female personnel on the project.

   b. Washing facilities: Adequate for number of employees, for type of work requiring washing facilities.

3. Maintain strict supervision of use of facilities:

   a. Enforce conformance with applicable standards.

   b. Maintain, service and clean facilities. All facilities will be cleaned out every day.

   c. Enforce proper use of sanitary facilities.
4. Cost of Installation and Operation:
   a. Pay costs of temporary sanitary facilities, including costs of installation, maintenance and removal.
   b. Pay service charges for use of portable units.
   c. Pay costs of water or ice.

5. Facility Locations:
   a. Within the project site.
   b. Drinking water: Convenient to work stations.
   c. Toilet and washing facilities:
      i. Secluded from public observation.
      ii. Convenient for use of personnel in relation to work stations.
   d. Obtain acceptance of CONSTRUCTION MANAGER.

6. Enclosure for Toilet Facilities:
   a. Weatherproof, sight proof, sturdy, temporary enclosures.
   b. Insect-proof screening, adequate natural ventilation.

7. Requirements of Regulatory Agencies:
   a. Obtain and pay for permits as required by governing authorities.
   b. Comply with federal, state and local codes, and utility company regulations.

E. CONTRACTOR EMPLOYEE PARKING

1. CONTRACTOR employee parking shall be allowed in only those areas approved by the CITY. The CONTRACTOR is to submit a plan of intended parking areas for approval 30 days prior to mobilizing on site. The plan shall include the proposed design and construction of the parking areas if required.

2. The CONTRACTOR is to maintain strict supervision of use of the parking areas. The CONTRACTOR is to maintain, service and clean the areas acceptable to the CITY.

F. CONTRACTOR OFFICES

1. If the CONTRACTOR is going to move an office trailer to the project site, the CONTRACTOR’S and subcontractor's office trailers are to be located in an area approved by the CITY.
2. The CONTRACTOR shall provide the following temporary utilities for the office trailers:
   a. Potable water
   b. Sanitary sewer
   c. Electrical
   d. Telephone

3. The CONTRACTOR shall be responsible for costs of installing the utilities from the points of connection, maintenance, and removal of all materials for all temporary utilities. The CONTRACTOR shall also be responsible for installation, maintenance and removal of the electrical power, telephone, lighting, potable water and sanitary sewer utilities for the CITY'S field office (if a field office is required in the contract). Additionally, the CONTRACTOR shall be responsible for maintenance and removal of parking areas around the CITY'S and CONTRACTOR'S office trailers. This shall include policing the area of litter and debris, and weed control.

G. FIRE PROTECTION

1. Provide and maintain a temporary fire protection system as construction progresses for control of fires that may occur during construction. Temporary fire protection shall be provided in accordance with Code requirements.

III. IMPLEMENTATION

A. MATERIALS

1. General:
   a. Temporary materials may be new or used, but shall be adequate for purpose required, sanitary, and shall not violate requirements of applicable codes.

2. Fire Protection Facilities
   a. Provide 20-pound, dry chemical type extinguisher with a UL rating as required by City and County Codes.
   b. Provide 10-pound, all purpose (ABC) dry chemical type extinguisher with a UL rating as required by City and County Codes.

-END-
SECTION 01410
TESTING AND TESTING LABORATORY SERVICES

I. SCOPE OF WORK

A. CITY will employ and pay for services of an independent testing laboratory to perform certain inspection and testing as required by the Contract Documents. This may include, but is not limited to, audio-visual surveillance of piping, testing of soil, concrete, or structural connections and other such tests which CITY deems necessary.

B. CONTRACTOR shall cooperate with the laboratory to facilitate the execution of its required services.

II. IMPLEMENTATION

A. CITY RESPONSIBILITY

1. CITY will retain a testing laboratory for the on-site testing of soil, asphalt, concrete and any other material processes or activities deemed necessary, or as required, by the Contract Documents. CITY will be responsible to decide what off-site testing is required.

2. On-site testing laboratory services will be supplied by, and evaluated by, CITY.

B. LABORATORY RESPONSIBILITIES

1. Meet "Recommended Requirements for Independent Laboratory Qualifications" latest edition, published by American Council of Independent Laboratories and be authorized/certified to perform work in the state of Florida.

2. Cooperate with ENGINEER and CONTRACTOR; provide qualified personnel promptly on notice.

3. Perform specified inspections, sampling, cylinder breaks and testing of materials and methods of construction:
   a. Comply with specific standards; ASTM, and other recognized authorities.
   b. Ascertain compliance with requirements of Contract Documents.

4. Promptly notify ENGINEER and CONTRACTOR of irregularities or deficiencies of work which are observed during performance of services.
5. Promptly submit five copies of reports of inspections and tests to ENGINEER, including:
   a. Date issued.
   b. Project title and Engineer's job number.
   c. Testing laboratory name and address.
   d. Name and signature of inspector.
   e. Date of inspection or sampling.
   f. Record of temperature and weather.
   g. Date of test.
   h. Identification of product.
   i. Location in project.
   j. Type of inspection or test.
   k. Observations regarding compliance with Contract Documents.

6. Perform additional services as required by CITY.

7. Laboratory will not be authorized to:
   a. Release, revoke, alter, or enlarge on requirements of Contract Documents.
   b. Approve or accept any portion of work.
   c. Perform any duties of the CONTRACTOR.

C. CONTRACTOR'S RESPONSIBILITIES

1. Cooperate with laboratory personnel, provide access to work, and to Subcontractor's and Suppliers operations.

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

3. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

4. 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. ENGINEER may require 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 compliance with the approved specifications for quality and workmanship. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the CONTRACTOR, and no extra charge to the CITY shall be allowed on account of such testing and certification.
5. Furnish incidental labor and facilities:
   
   a. To provide access to work to be tested.
   
   b. To obtain and handle samples at the project site or at the source of the product to be tested.
   
   c. To facilitate inspections and tests.
   
   d. For storage and curing of test samples.

6. Notify laboratory and ENGINEER sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

-END-
SECTION 01420

DRAWINGS AND SUBMITTALS

I. SCOPE

A. In accordance with the General Conditions, CONTRACTOR shall submit a detailed list of data on items for which shop drawings, construction drawings, and samples are to be submitted. Included in this list shall be the names of all proposed Suppliers furnishing specified items. Review of this list by CONSTRUCTION MANAGER shall not relieve CONTRACTOR from submitting complete drawings and data and providing materials, equipment, etc., fully in accordance with the Contract Documents.

II. IMPLEMENTATION

A. CONTRACTOR Responsibility:

1. All submittals shall be in accordance with the General Conditions and accompanied by a transmittal letter prepared in duplicate containing at least the following information:
   a. Date.
   b. Project Title and Number.
   c. CONTRACTOR’S name and address.
   d. The number and revision of each drawing submitted.
   e. Notification of Deviations from Contract Documents.
   f. Submittal Log Number.
   g. Specification title and number.

2. Be responsible for and bear costs of damages which may result from the ordering of material or from proceeding with any part of work prior to the completion of the review by CONSTRUCTION MANAGER of the necessary submittals unless otherwise authorized by CONSTRUCTION MANAGER in writing.

3. Notify CONSTRUCTION MANAGER of the need for making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment CONTRACTOR proposes to supply, both as it concerns his own work, or any work affected under other parts, headings, or divisions of drawings and specifications.

B. CONSTRUCTION MANAGER’S REVIEW

1. Submittals will be reviewed in accordance with the General Conditions.

2. Resubmittals will be handled in the same manner as first submittals. On resubmittals CONTRACTOR shall direct specific attention, in writing or on resubmitted drawings, to revisions other than the corrections requested by CONSTRUCTION MANAGER on previous submissions. CONTRACTOR shall make any additional corrections or clarifications required by CONSTRUCTION MANAGER.
3. If CONTRACTOR considers any correction indicated on the drawings to constitute a change to the Contract Documents, CONTRACTOR shall give written notice thereof to CONSTRUCTION MANAGER.

4. No partial submittals will be reviewed. Submittals not complete will be returned to CONTRACTOR for resubmittal.

5. All drawings, schematics, manufacturer’s product data, certifications and other drawing submittals required for a system specification shall be submitted at one time as a package to facilitate interface checking.

C. SHOP DRAWINGS AND DATA

1. Shop Drawings, as defined in the General Conditions, shall complement design and construction drawings, but shall contain sufficient detail to clearly define all aspects of the construction. These drawings shall be complete and detailed.

2. CONTRACTOR or Supplier's catalog sheets, brochures, diagrams, illustrations and other standard descriptive data shall be clearly marked with specification title and numbers to identify pertinent materials, product or models. Delete information which is not applicable to the Work by striking or cross-hatching.

3. Each Shop Drawing shall have a blank area located adjacent to the title block. The title block shall display the following:
   a. Project Title and Number
   b. Name of project building or structure
   c. Number and title of the shop drawing
   d. Date of Shop drawing or revision
   e. Name of Contractor and subcontractor submitting drawing
   f. Supplier/Manufacturer
   g. Separate detailer when pertinent
   h. Specification title and number
   i. Drawing number

4. If shop drawings show variations from Contract requirements because of standard shop practice or for other reasons, CONTRACTOR shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If CONTRACTOR fails to describe such variations, CONTRACTOR shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such drawings have been reviewed.

5. Data on materials and equipment shall include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, verification of conformance with applicable standards or codes, materials of construction and similar descriptive material. Materials and equipment lists shall, for each item, give: the name and location of the Supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.
6. For all equipment furnished, CONTRACTOR shall provide a list including the equipment name, address and telephone number of the Supplier's representative and service company so that service and/or spare parts can be readily obtained.

7. CONTRACTOR will obtain an installation list from suppliers and equipment suppliers who propose to furnish equipment or products for submittal to CONSTRUCTION MANAGER along with the required shop drawings. The installation list shall include at least five installations where identical equipment has been installed and has been in operation for a period of at least one year.

8. Only CONSTRUCTION MANAGER will utilize the color "green" in marking shop drawing submittals.

D. CONSTRUCTION DRAWINGS

1. When used in the Contract Documents, the term "construction drawings" shall be considered to include CONTRACTOR's plan for temporary structures such as temporary construction fencing, support of open cut excavation, support of utilities, ground water control systems, forming and false-work; for underpinning; and for such other work as may be required for construction but which does not become an integral part of the project.

2. Copies of construction drawings shall be submitted to CONSTRUCTION MANAGER at least 30 calendar days (unless otherwise specified by CONSTRUCTION MANAGER) in advance of their being required for work.

3. Construction drawings shall be signed by a registered Professional Engineer or Architect, currently licensed to practice in the State of Florida, 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, construction drawings must have been reviewed without specific exceptions by CONSTRUCTION MANAGER, which review will be for general conformance and will not relieve CONTRACTOR in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks to new or existing work are assumed solely by CONTRACTOR. CONSTRUCTION MANAGER review of the construction drawing assumes no responsibility for construction drawing design or implementation by CONSTRUCTION MANAGER or CITY.

E. SAMPLES

1. CONTRACTOR shall furnish, for the approval of CONSTRUCTION MANAGER, samples required by the Contract Documents or as may be reasonably requested by CONSTRUCTION MANAGER. Samples shall be delivered to CONSTRUCTION MANAGER as directed. CONTRACTOR shall prepay shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until approved by CONSTRUCTION MANAGER.

2. Provide two of each requested sample, unless directed otherwise. Samples shall be of sufficient size to clearly illustrate:

   a. Functional characteristics of the product, with integrally related parts and attachment devices.

   b. Full range of color, texture and pattern.
3. Each sample shall have a label indicating:
   a. Name of Project.
   b. Name of CONTRACTOR and subcontractor.
   c. Material or equipment represented.
   d. Place of origin.
   e. Name of producer and brand (if any).
   f. Location in Project.
   g. Specification title and number.
   h. Submittal number.

   Note: Samples of finished materials shall have additional marking that will identify them under the finished schedules.

4. CONTRACTOR shall prepare a transmittal letter, in triplicate for each shipment of samples, containing the information required in paragraph II.E.3. CONTRACTOR shall enclose a copy of this letter with the shipment and send a copy of this letter to CONSTRUCTION MANAGER. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.

5. Approved samples not destroyed in testing shall be sent to CONSTRUCTION MANAGER or stored at the site of the Work. Approved samples of the hardware in good condition will be marked for identification and may be used in the Work. Materials and equipment incorporated in the work shall match the approved samples. Samples which failed testing or were not approved will be returned to CONTRACTOR at his expense, if so requested at time of submission.

-END-
Section 01568
TEMPORARY EROSION AND SEDIMENTATION CONTROL

1. SCOPE OF WORK

The CONTRACTOR shall provide, maintain and remove temporary erosion and sedimentation controls according to the Stormwater Pollution Prevention Plan (SWPPP) as required by Florida Department of Environmental Protection (FDEP). The SWPPP is developed by the Design Engineer according to Florida Administrative Code Section 62-621.300(4)(a) entitled “Generic Permit for Stormwater Discharge from Large and Small Construction Activity.” The SWPPP is included in the Contract Documents. The CONTRACTOR shall comply with the terms of the SWPPP. All projects that will disturb one (1) acre of land or more shall submit the notice set forth in FDEP Form 62-621.300(4)(b) to FDEP and obtain the acknowledgement letter with the FDEP identification number of the Project prior to commencement of any construction activity. All projects that disturb less than one (1) acre of land shall have a SWPPP approved by the CITY included in the Contract Documents. The CONTRACTOR is responsible for keeping the FDEP permit acknowledgement letter and the SWPPP at the Project site at all times for projects over one (1) acre.

2. IMPLEMENTATION

The CONTRACTOR shall implement temporary controls to prevent soil erosion from the Project site caused by stormwater runoff, soil tracking by equipment, and/or wind. Temporary controls shall be implemented as shown on the SWPPP. Best Management Practices (BMPs) included in the SWPPP such as installation of silt fence, measures at construction entrances and exits that prevent soil tracking, dust control, and stabilizing of stockpiles shall be installed and maintained by the CONTRACTOR. The CONTRACTOR shall be responsible for implementing any additional BMPs that are necessary to comply with Federal, State and Local laws and regulations at no additional cost to the CITY. The CONTRACTOR shall notify the Engineer of any required changes and modify the SWPPP accordingly subject to CITY approval.

Sedimentation control shall be implemented according to the SWPPP and must prevent turbid stormwater runoff greater than 29 nephelometric turbidity units (NTU) turbidity from leaving the Project site. BMPs shall be installed and maintained by the CONTRACTOR according to the SWPPP. No hay bales shall be used. Dewatering must be done by installing well point systems or any other CITY-approved method that will only discharge clear water with a turbidity level in compliance with allowable standards.

3. COMPLETION

The CONTRACTOR shall clean debris and soil from all new and existing storm sewer pipes and structures within the Project site after the construction is completed. The CONTRACTOR shall clean debris and soil from all existing storm sewer pipes and structures outside the Project site if these materials originated from the Project site. The CONTRACTOR shall remove any soil deposits at outfalls from pipes in lakes or ponds that were caused by the construction. The CONTRACTOR shall remove all erosion control equipment after the Project site is stabilized and storm system is cleaned. The foregoing items must be completed for the Work to be determined to have reached Final Completion.

END
SECTION 01570

MAINTENANCE OF TRAFFIC

I. SCOPE OF WORK

CONTRACTOR is responsible for protecting vehicular and pedestrian traffic on the streets and sidewalks adjacent to the worksite affected by the construction; restricting construction vehicle traffic to approved haul routes and travel times; and ensuring unimpeded access to facilities adjacent to the worksite. This shall include the construction and maintenance of any necessary detour facilities; the providing of necessary facilities for access to residences, businesses, etc., along the project; the furnishing, installing, and maintenance of traffic control and safety devices during construction; the control of dust and any other special requirements for safe and expeditious movement of traffic. CONTRACTOR will be required to remove all temporary construction and return all roads and disturbed areas to preconstruction conditions, unless required otherwise by the Contract Documents. The term "Maintenance of Traffic", as used in the Contract Documents, shall include all of such facilities, devices and operations as required for the safety and convenience of the public as well as for minimizing public nuisance.

Unless otherwise provided, all roads within the limits of the Work shall be kept open to all traffic by CONTRACTOR. Where so provided on the plans, or approved by the Engineer, CONTRACTOR shall keep the portion of the project being used by public traffic, whether it be through or local traffic, in such condition that traffic will be adequately accommodated. He shall furnish, erect and maintain, barricades, warning signs, delineators, flagmen or pilot cars in accordance with the Manual of Uniform Traffic Control Devices for Streets and Highway published by the United States Government Printing Office. He shall also provide and maintain in a safe condition temporary approaches or crossings with trails, roads, streets, businesses, parking lots, residences, garages and farms. CONTRACTOR shall bear all expense of maintaining the traffic over the section of road involved in construction and of constructing and maintaining such approaches, crossings intersections, and other features as may be necessary.

II. IMPLEMENTATION

CONTRACTOR shall at his expense submit a Traffic Control Plan for approval by ENGINEER. This plan shall be signed and sealed by Professional Engineer registered in the state of Florida and shall include proposed locations and time durations of the following, as applicable:

A. Pedestrian and public vehicular traffic routing.
B. Traffic blockage and lane restrictions and reductions anticipated to be caused by construction operations.
C. Allowable on-street parking within the immediate vicinity of worksite.
D. Access to buildings immediately adjacent to worksite.
E. Driveways which will be blocked by construction operations.
F. Temporary traffic control devices, temporary pavement striping and marking of streets and sidewalks affected by construction.
G. Temporary commercial and industrial loading and unloading zones.
H. Construction vehicle reroutes, travel times, staging, locations, and number and size of vehicles.
CONTRACTOR shall submit lane and sidewalk closure plans before starting Work. The plans shall have the written approval of ENGINEER before implementation. Show and describe the proposed location, dates, hours and duration of closure, vehicular and pedestrian traffic routing and management, traffic control devices for implementing pedestrian and vehicular movement around the closures, and details of barricades.

CONTRACTOR shall notify individual owners, owners' agents, and tenants of buildings adjacent to worksite, in writing with copies to ENGINEER, before impairing access to those buildings and/or use of public ways adjacent to the buildings or prohibiting the stopping and parking of vehicles.

In all cases, ENGINEER will determine the need for, and extent of, striping removal and restriping. During any suspension, CONTRACTOR shall make passable and shall open to traffic such portions of the project and/or temporary roadways as directed by ENGINEER for the temporary accommodation of necessary traffic during the anticipated period of suspension. Passable conditions will be maintained until issuance of an order for the resumption of construction operations. The maintenance of the temporary route of line of travel agreed upon will be by and at the expense of CONTRACTOR. When work is resumed, CONTRACTOR shall replace or renew any work or materials lost or damaged because of such temporary use of the project in every respect as though its prosecution had been continuous and without interferences.

-END-
SECTION 01580
PROJECT IDENTIFICATION SIGN

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The Contractor shall furnish, install, and maintain all sign materials including sign posts, weighted stands, brackets, any required mounting hardware, and miscellaneous materials required for temporary project identification signs.

B. See Construction Sign Detail on page 01580-4.


D. Remove project identification signs upon completion of construction.

E. Allow no other signs to be displayed without written approval of the City.

1.02 SUBMITTALS

A. Submit complete Shop Drawings identifying locations, material, layout, sign content, font type and size, and sample colors. Make sign and lettering to scale, clearly indicating condensed lettering if used. The sign details will be submitted to the City for approval prior to fabrication.

B. Submit method of erection to include materials, fasteners, and other items to assure compliance with the requirements for wind pressures / speed as required by the authorities having jurisdiction.

C. Submit signs in accordance with any details provided in the drawings as shown on standard detail drawing on page 01580-4 Construction Sign Detail and drawing on page 01580-5 Construction Sign Layout.

1.03 PROJECT IDENTIFICATION SIGN

A. Provide one sign at the project site, or one at each end of the Project if it is a linear roadway project, or one at each location if the project includes separate work sites, as applicable. The sign will be not less than 32-square feet area, with a minimum dimension of 4-feet and painted graphics with content to include:
   1. Title of Project
   2. City of Orlando and logo.
   3. Names and titles of the City Government Officials.

B. Erect the sign(s) on the site at a lighted location of high public visibility, adjacent to main entrance to site or project, as approved by the Engineer. The sign must be located 5-feet from the right-of-way and 20-feet from all property lines.
PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: New construction grade lumber, structurally adequate and suitable for exterior application and specified finish.

B. Sign Panels: New A-B Grade, exterior type, APA MDO plywood both sides.
   1. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles, minimum 3/4-inch.

C. Rough Hardware: Galvanized steel, of sizes and types to enable sign assemblies to resist wind loads as required by authorities having jurisdiction but not less than wind velocity of 50 mph.
   1. Use minimum 1/2-inch diameter button head carriage bolts to fasten sign panels to supporting structures or #10 x 2½” zinc wood screw spaced at 6” on center. Bolt heads to be painted to match sign face.

D. Paint: Exterior quality, as specified in Division 9 or as a minimum as specified herein.
   1. Primer and finish coat: exterior, semi-gloss, enamel.
   2. Colors for structure, framing, sign surfaces, and graphics: As shown on the Drawings or as selected by the Engineer.

PART 3 - EXECUTION

3.01 PROJECT IDENTIFICATION SIGN

A. Install project identification signs within 10-days of the Notice to Proceed date. Failure to erect the signs may be reason to delay approval of the initial Application for Payment.

B. Paint exposed surfaces of supports, framing, and surface material; one (1) coat of primer and two (2) coats of finish paint.

C. Set signs plumb and level and solidly brace as required to prevent displacement during the Construction period. If mounted on posts, sink posts 3-feet to 4-feet below grade, leaving a minimum of 8-feet of each post above grade for mounting the sign.

D. Install informational signs at a height for optimum visibility, on ground mounted poles or attached to temporary structural surfaces.

3.02 MAINTENANCE

A. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing, or sign.

B. Relocate informational signs as required by the progress of the Work.
C. Poorly maintained, defaced, damaged, or dirty signs shall be replaced, repaired, or cleaned without delay, at no additional cost to the City.

D. Special care must be taken to ensure that construction materials and dust are not allowed to obscure the face of a sign.

E. Signs not in effect shall be covered or removed.

3.03 REMOVAL

A. Remove signs, framing, supports, and foundations at Completion of the Work.

B. Leave areas clean and patch as required to remove any traces of temporary signs.
NOTES:
1. SIGN BOARD IS 3/4" x 4' x 8' NEW CONSTRUCTION MATERIALS, EXTERIOR GRADE PLYWOOD MDO BOTH SIDES
2. POST: 4" x 4" TREATED SOUTHERN YELLOW PINE.
3. LOCATION OF SIGN TO BE DETERMINED BY PROJECT REPRESENTATIVE.
4. USE CARRIAGE BOLTS 3/8" x 8" WITH WASHERS, ALL PIECES TO BE GALVANIZED FOR FRAME AND BRACES.

PROJECT CONSTRUCTION SIGN DETAIL
GENERAL REQUIREMENTS

PROJECT CONSTRUCTION SIGN LAYOUT WITHOUT RENDERING

LEGEND:

1. CITY MASTHEAD - CUSTOMIZED MASTHEAD MUST REFLECT THE DIVISION MANAGING THE PROJECT
2. NAME OF PROJECT - HELVETICA BOLD - NO SMALLER THAN 300PT OR 5 INCHES HIGH. FOR LONGER LINES OF TEXT USE TWO LINES STACKED
3. COMPLETION DATE (SEASON/YEAR) - HELVETICA ITALIC - NO SMALLER THAN 200PT OR 3.75 INCHES HIGH. FOR LONGER LINES OF TEXT USE TWO LINES STACKED.
4. MAYOR BUDDY DYER - HELVETICA BOLD, ALL CAPS, NO SMALLER THAN 170 POINT SIZE OR 2.5 INCHES HIGH
5. COMMISSIONER NAME - HELVETICA, NO SMALLER THAN 170 POINT SIZE OR 3 INCHES HIGH
6. DISTRICT - HELVETICA, NO SMALLER THAN 125 POINT SIZE OR 2.5 INCHES HIGH
   NOTE: THE COMMISSIONER AND DISTRICT THAT THE PROJECT IS BUILT IN NEEDS TO BE HELVETICA BOLD
7. WEBSITE (CITYOFORLANDO.NET/CI) - HELVETICA BOLD, NO SMALLER THAN 110 POINT SIZE OR 2 INCHES HIGH. DO NOT PLACE A "WWW" IN FRONT OF WEB ADDRESS
8. CONTACT INFORMATION - HELVETICA, NO SMALLER THAN 110 POINT SIZE OR 2 INCHES HIGH. USE DOTS (.) NOT DASHES (-) IN PHONE NUMBER
9. SIGN APPROVAL - ALL SIGNAGE MUST BE APPROVED BY THE DIRECTOR OF OFFICE OF COMMUNICATIONS AND NEIGHBORHOOD RELATIONS
PROJECT CONSTRUCTION SIGN LAYOUT WITH RENDERING

END OF SECTION
SECTION 01600

MATERIALS AND EQUIPMENT

I. SCOPE OF WORK

CONTRACTOR is responsible for furnishing and installing the material and equipment as required by the Contract Documents. Proper approval of submittals and substitutions are required. Furnished material and equipment shall be properly transported, handled, stored and protected in accordance with manufacturer's instructions; federal, state or local regulations, or as approved by ENGINEER.

A. Material and equipment incorporated into the Work:
   1. Shall not be defective.
   2. Shall comply with size, make, type and quality as specified in the Contract Documents, or as specifically approved in writing by ENGINEER.
   3. Shall not be used for any purpose other than that for which is designed or is specified.

B. Manufactured and fabricated products:
   1. Design, fabricate and assemble in accordance with the best engineering and shop practices.
   2. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
   3. Two or more items of the same kind shall be identical, supplied by the same manufacturer.
   4. Products shall be suitable for service conditions.
   5. Equipment capacities, sizes and dimensions shown or a specified shall be adhered to unless variations are specifically approved in writing.

C. APPROVAL OF MATERIALS

   1. Only new materials and equipment shall be incorporated in the Work unless otherwise specified in the Contract Documents or approved by ENGINEER. All materials and equipment furnished by CONTRACTOR shall be subject to the inspection and approval of ENGINEER. No material shall be delivered to the Work without prior written approval of ENGINEER.
2. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by CONTRACTOR. If required by the Contract Documents or as requested by ENGINEER, either prior to beginning or during the progress of the Work, CONTRACTOR shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the approved specifications. Such samples shall be furnished, in accordance with the General Conditions. Except as otherwise noted, ENGINEER will make arrangements for and pay for the tests.

3. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes and surfaces, CONTRACTOR shall provide such samples of workmanship or finish as may be required.

4. The materials and equipment used on the Work shall correspond to the approved samples or other data.

II. IMPLEMENTATION

A. MANUFACTURER's INSTRUCTIONS FOR INSTALLATION

1. 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 five copies to ENGINEER.
   a. Maintain one set of complete instructions at the job site during installation and until completion.

2. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
   a. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with ENGINEER for further instruction.
   b. Do not proceed with work without clear instructions.
   c. Do not omit any preparatory step or installation procedure unless specifically approved by ENGINEER.

B. TRANSPORTATION AND HANDLING

1. Arrange deliveries of products in accordance with construction schedules; coordinate to avoid conflict with work and conditions at the site.
   a. Deliver products in undamaged condition in manufacturer's original containers or packaging, with identifying labels intact and legible.
   b. Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

2. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.
C. STORAGE AND PROTECTION

1. 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 and maintenance of stored 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 or moisture protection in equipment, etc. 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 application for payment.

2. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
   a. Store products subject to damage by the elements in weathertight enclosures.
   b. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
   c. Store fabricated products above the ground, on blocking or skids, to prevent soiling or staining. Cover products which are subject to deterioration or discoloration with impervious sheet covering; provide adequate ventilation to avoid condensation.
   d. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

3. All materials and equipment to be incorporated in the Work shall be handled and stored by 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.

4. Cementitious and other products sensitive to moisture damage shall be stored under a roof, off the ground and shall be kept completely dry at all times. All structural and miscellaneous steel, and reinforcing steel shall be stored off the ground to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete beams shall be handled and stored in a manner to prevent staining, chipping or cracking or accumulations of dirt, and standing water. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling, to a minimum.

5. All materials which, in the opinion of ENGINEER, have become so damaged as to be unfit for the use intended shall be promptly removed from the site of the Work, and CONTRACTOR shall receive no compensation for the damaged material, its removal or its replacement.

6. 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.
7. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.

8. CONTRACTOR shall be responsible for all material, equipment and supplies sold and delivered to CITY under this Contract until final inspection of the Work and acceptance by the ENGINEER. In the event any such material, equipment and supplies are lost, stolen, or become defective prior to final inspection and acceptance, CONTRACTOR shall replace same without additional cost to CITY.

9. Should CONTRACTOR fail to take proper action on storage and handling of equipment supplied under this Contract within ten days after written notice to do so has been given, CITY retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from CONTRACTOR'S next progress payment. These costs may be comprised of expenditures for labor equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

D. SPECIAL TOOLS

1. 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. CONTRACTOR shall preserve and deliver to ENGINEER these tools and instructions in good order prior to ENGINEER'S acceptance of said equipment.

E. STORAGE AND HANDLING OF EQUIPMENT ON SITE

1. Special attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed:
   a. All equipment having moving parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by ENGINEER, until such time as the equipment is to be installed.
   b. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
   c. Manufacturer's storage instructions shall be carefully studied by CONTRACTOR and reviewed with ENGINEER. These instructions shall be carefully followed and a written record of this kept by CONTRACTOR.
   d. Moving parts shall be rotated (in accordance with the manufacturer's instructions) a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, CONTRACTOR shall (run) start the equipment (in accordance with the manufactures instructions), at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.
e. Lubricants shall be changed upon completion of installation and as frequently as required by the installation environmental conditions (dust etc.) or manufactures instructions thereafter during the period between installation and acceptance. Mechanical equipment to be used in the Work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed and lubricated prior to testing and startup, at no extra cost to CITY.

f. Prior to acceptance of the equipment, CONTRACTOR shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer, shall document that the equipment is in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at CONTRACTOR'S expense.

F. SPARE PARTS AND MAINTENANCE MATERIALS

1. Spare parts and maintenance materials shall be supplied in accordance with the Contract Documents. CONTRACTOR shall collect and store all spare parts in an area to be designated by ENGINEER. In addition, CONTRACTOR shall furnish to ENGINEER an inventory listing all spare parts and maintenance materials, 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 inventory to substantiate the delivered cost.

H. GREASE, OIL AND FUEL

1. All grease, oil and fuel required for testing and initial operation of equipment shall be furnished by CONTRACTOR.

2. CONTRACTOR shall be responsible for changing the oil in all (gear compartments) drives of mechanical equipment, after initial break-in of the equipment, which in no event shall be any longer than three weeks of operation.

-END-
SECTION 01650

START-UP/CHECK OUT

I. SCOPE OF WORK

A. The work specified in this SECTION consists of start-up and final check out of Mechanical, Electrical, Communications, Pneumatic, Hydraulic, Conveyance or Special Construction or any other discipline as called for by the technical specifications of the Contract Documents. These systems (heating, ventilating, air conditioning, plumbing, fire protection systems, HVAC and control systems, communications and alarm systems, lighting, power distribution, controls, and other electrical systems and elevators) and other operating equipment as required; will be demonstrated, to ENGINEER, to operate in the manner prescribed by the Contract Documents to ensure a complete operating systems, ready for CITY's use.

II. IMPLEMENTATION

A. Preliminary Requirements

1. Start-up Certification: Prior to start-up of a system, successfully complete all the testing required of the individual components of the system. Submit five copies of DEMONSTRATION CERTIFICATION (attached to this section) signed by CONTRACTOR, subcontractor and the manufacturer's representative. All copies shall be provided with the respective copies of the Operation and Maintenance Manual. This form shall be completed and submitted before Instruction in Operation to ENGINEER or a request for final inspection.

2. Demonstrate to ENGINEER and DESIGN ENGINEER that all of the components of the system are operating under their own controls as designated.

3. Coordinate start-up activities with CITY's operating personnel, the Manufacturers Representative and with ENGINEER prior to commencing start-up of a system.

B. START-UP

1. Confirm that all equipment in a system is properly energized, prior to start-up.

2. Initiate start-up of each system in accordance with the Operation and Maintenance Manual.

3. Observe the system operation and make adjustments as necessary to optimize the system performance.

4. Coordinate with ENGINEER and DESIGN ENGINEER for any adjustments desired or operational problems requiring debugging.

5. Make adjustments as necessary.

6. Acceptability of each system's performance will be based on the system performing as specified, under actual operating conditions. The intent of the start-up is to demonstrate to ENGINEER that each system will function as a complete and operable system under normal as well as emergency operating conditions and is ready for acceptance.

7. Demonstrate the essential features of the systems as delineated elsewhere in the Contract
Documents. Each system shall be successfully demonstrated only once, after completion of all required testing. The disciplines involved may include, but are not limited to:

a. Mechanical
b. Conveyance
c. Electrical
d. Communication
e. Instrumentation & Controls
f. Pneumatic
g. Hydraulic
h. Specialized Construction

C. Certificate of Completed Start-Up Demonstration:

1. Submit five copies of Certificate of Completed Start-Up Demonstration memo signed by CONTRACTOR, Subcontractor and ENGINEER and insert one copy in each Operation and Maintenance Manual.
MANUFACTURER'S CHECK CERTIFICATION

___ CITY OF ORLANDO: No. Copies ___
___ ENGINEER No. Copies ___
___ DESIGN ENGINEER: No. Copies ___
___ CONTRACTOR No. Copies ___
___ FIELD: No. Copies ___
___ OTHER: No. Copies ___

PROJECT DATA AND CONTRACT DATA

NAME OF PROJECT: IFB17-0158, Vineland Road Drainage Improvement
PROJECT NUMBER: CIP0032_P

LOCATION:____________________________________________ DATE:___________________________
CITY:____________________________________________________ DRAWING NO.:________________

OTHER:___________________________________________________________________

SYSTEM DESCRIPTION:____________________________________________________________________

Name of equipment checked:_______________________________________
Name of manufacturer or equipment:_______________________________

1. The equipment furnished by us has been checked on the job by us. We have reviewed (where applicable) the performance verification information submitted to us by CONTRACTOR.

2. The equipment is properly installed, except for items noted below.*

3. The equipment is operating satisfactorily, except for items noted below.*

4. The written operating and maintenance information (where applicable) has been presented to CONTRACTOR, and has been reviewed with him in detail. Five (5) copies of all applicable operating and maintenance information and parts lists have been furnished to CONTRACTOR for insertion in each of the Equipment Brochures.
**MANUFACTURER'S CHECK CERTIFICATION SIGNATURE PAGE**

**MANUFACTURER***

Checked By:  
Name of Mfgr's Rep.:  

Name of CONTRACTOR

Address & Phone # of Rep.:  

Address & Phone # of Contractor

Authorized Sign/Title/Date

**SUBCONTRACTOR**

Name of Subcontractor Making Check

Address & Phone # of Subcontractor

Authorized Sign/Title/Date

*Manufacturer's Representative Notations: Exceptions noted at time of check were:

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_______________________________________________________________________________________________

_______________________________________________________________________________________________

_______________________________________________________________________________________________

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Manufacturer's Representative to note adequacy of related equipment that directly affects operation, performance or function of equipment checked. (No comment presented herein will indicate adequacy of related systems or equipment):

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GENERAL REQUIREMENTS 7/5/05  01650-4
DEMONSTRATION / START-UP CERTIFICATION

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CITY OF ORLANDO: ____________________________ No. Copies ____
ENGINEER: ________________________________ No. Copies ____
DESIGN ENGINEER: _________________________ No. Copies ____
CONTRACTOR: ____________________________________________ No. Copies ____
FIELD: ___________________________________________ No. Copies ____
OTHER: ____________________________________________ No. Copies ____

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PROJECT DATA AND CONTRACT DATA

NAME OF PROJECT: IFB17-0158, Vineland Road Drainage Improvement
PROJECT NUMBER: CIP0032_P

LOCATION:____________________________________________ DATE:___________________________
CITY:__________________________________________________ DRAWING NO.:________________
OTHER:_________________________________________________________________
SYSTEM DESCRIPTION:____________________________________________________________________

NOTE TO CONTRACTOR:

Submit five (5) copies of all information listed below for checking at least one week before scheduled start-up demonstration of the system. After all information has been approved by ENGINEER, give CITY a start-up demonstration as specified and have the CITY sign five copies of this form. After this has been done, a written request for a final inspection of the system shall be made.

MEMORANDUM:

This memo is for the information of all concerned that the CITY has been given a start-up demonstration on the system described above. This start-up demonstration consisted of the system operation, during which all major items of equipment were explained and demonstrated, and the following items were given to the CITY:

(a) CITY’s copy of Operation and Maintenance Manual for the system containing approved submittal sheets on all items, including the following:

   (1) Maintenance information published by manufacturer on equipment items.

   (2) Printed warranties by manufacturers on equipment items.

   (3) Performance verification information as recorded by CONTRACTOR.
(4) Check-out Memo on equipment by manufacturer's representative.

(5) Written operating instructions on any specialized items.

(6) Explanation of guarantees and warranties on the system.

(b) Prints showing actual "As-Built" conditions.

(c) A demonstration of the system in operation and of the maintenance procedures which will be required.

______________________________________________________________________________

(Name of CONTRACTOR)

By:___________________________________________________________________________

(Authorized Signature, Title & Date)

______________________________________________________________________________

(Name of Subcontractor)

By:___________________________________________________________________________

(Authorized Signature, Title & Date)

Operation and Maintenance Manual, Instruction Prints, Start-Up Demonstration and Instruction in Operation Received:

______________________________________________________________________________

(CITY OF ORLANDO)

By:___________________________________________________________________________

(Authorized Signature, Title & Date)

-END-
SECTION 01710

PROJECT HOUSEKEEPING/CLEANING

I. SCOPE OF WORK

A. Maintain construction cleanliness during progress of the Work and perform final cleaning at completion of the Work, and as required by conditions of the Contract. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

B. Materials

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

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

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

II. IMPLEMENTATION

A. DURING CONSTRUCTION

1. Execute daily cleaning to keep the Work, the site, access ways, streets and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

2. Provide on-site containers for the collection of waste materials, debris and rubbish containers must be emptied daily or as frequently as necessary to contain disposals

3. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

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

B. FINAL CLEANING

1. Employ skilled workmen for final cleaning.

2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

3. Prior to final completion, or CITY occupancy, CONTRACTOR shall conduct an inspection of all work areas, to verify that the entire Work is clean.

- END -
SECTION 01730
OPERATING AND MAINTENANCE DATA

I. SCOPE OF WORK:

A. Compile and submit product data and related information for maintenance and operation of all products furnished under Contract. Prepare and submit operating and maintenance data as specified in this SECTION.

B. Instruct CITY'S personnel in maintenance of products and in operation of equipment and systems incorporated into the work.

II. IMPLEMENTATION

A. Manual: Preparation and Description

1. Preparation of data shall be done by personnel:
   a. Trained and experienced in maintenance and operation of described products.
   b. Familiar with requirements of this SECTION.
   c. Skilled as technical writer to the extent required to communicate essential data.
   d. Skilled as draftsman competent to prepare required drawings.

2. Description
   a. Prepare data in the form of an instructional manual for use by CITY'S personnel.
   b. Format:
      i. Size: 8-1/2 inches x 11 inches.
      ii. Paper: 20 pound minimum, white, for typed pages.
      iii. Text: Manufacturer's printed data, or neatly typewritten.
   c. Drawings:
      i. Provide reinforced punched binder tab, bind in with text.
      ii. Reduce larger drawings and fold to size of text pages, but do not use drawing prints larger than 14 inches x 17 inches.
d. Provide fly-leaf for each separate product, or each piece of operating equipment.
   i. Provide typed description of products and major component parts of equipment.
   ii. Provide indexed tabs.

e. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:
   i. Title of Project.
   ii. Identity of separate structure as applicable.
   iii. Identity of general subject matter covered in the manual.

3. Binders:
   b. Maximum post height: 2 inches.
   c. When multiple binders are used, correlate the data into related consistent groupings.

4. Content
   a. At a minimum provide a neatly typewritten table of contents for each volume, arranged in systematic order.
      i. CONTRACTOR, name of responsible principal, address and telephone number.
      ii. A list of each product required to be included, indexed to content of the volume.
      iii. List, with each product, name, address and telephone number of:
         aa. Subcontractor or installer.
         ab. A list of each product required to be included, indexed to content of volume.
         ac. Identify area of responsibility of each.
         ad. Local source of supply for parts and replacements.
   b. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
c. Product Data:
   i. Include only those sheets which are pertinent to the specific product.
   ii. Annotate each sheet to:
       aa. Clearly identify specific product or part installed.
       ab. Clearly identify data applicable to installation.
       ac. Delete references to inapplicable information.

d. Supplemental product data: as necessary to clearly illustrate:
   i. Relations of component parts of equipment and systems.
   ii. Control and flow diagrams.

e. Written text, as required to supplement product data for the particular installation.
   i. Organize in consistent format under separate headings for different procedures.
   ii. Provide logical sequence of instructions of each procedure.

f. Coordinate drawings with information in Record Documents to assure correct illustration of completed installation.

g. Do not use Record Documents as maintenance drawings.

h. Copy of each warranty, bond and service contract issued.
   i. Provide information sheet for CITY’S personnel:
       aa. Proper procedures in event of failure.
       ab. Instances which might affect validity of warranties or bonds.

B. Manual for Materials and Finishes
   1. Submit six copies of complete manual in final form.
   2. Content: for architectural products, applied materials and finishes.
      a. Manufacturer's data, giving full information on products.
         i. Catalog number, size, composition.
         ii. Color and texture designations.
         iii. Information required for reordering special manufactured products.
      b. Instructions for care and maintenance.
i. Manufacturer's recommendation for types of cleaning agents and methods.

ii. Cautions against cleaning agents and methods which are detrimental to product.

iii. Recommended schedule for cleaning and maintenance.

3. Content: for moisture protection and weather-exposed products.
   a. Manufacturer's data, giving full information on products.
      i. Applicable standards.
      ii. Chemical composition.
      iii. Details of installation.
   b. Instructions for inspection, maintenance and repair.

4. Additional requirements for maintenance data: As requested by the ENGINEER.

C. Manual for Equipment and Systems
   1. Submit six copies of complete manual in final form.
   2. Content, for each unit of equipment and system, as appropriate:
      a. Description of unit and component parts.
         i. Function, normal operating characteristics, and limiting conditions.
         ii. Performance curves, engineering data and tests.
         iii. Complete nomenclature and commercial number of replaceable parts.
      b. Operating procedures:
         i. Start-up, break-in, routine and normal operating instruction.
         ii. Regulation, control, stopping, shut-down and emergency instructions.
         iii. Summer and winter operating instructions.
         iv. Special operating instructions.
      c. Maintenance procedures:
         i. Routine operations.
         ii. Guide to "trouble-shooting".
         iii. Disassembly, repair and reassembly.
         iv. Alignment, adjusting and checking.
d. Servicing and lubrication required.

e. Manufacturer's printed operating and maintenance instructions.

f. Description of sequence of operation by control manufacturer.

g. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.

i. Predicted life of parts subject to wear.

ii. Items recommended to be stocked as spare parts.

h. As installed control diagrams by controls manufacturer.

i. Each subcontractor's coordination diagrams.

j. Charts of valve tag numbers, with location and function of each valve.

k. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.

l. Certificate of Demonstration.

3. Content, for each electric and electronic system, as appropriate:

a. Description of system and component parts.

i. Function, normal operating characteristics, and limiting conditions.

ii. Performance curves, engineering data and tests.

iii. Complete nomenclature and commercial number of replaceable parts.

b. Circuit directories of panel boards.

i. Electrical service

ii. Controls

iii. Communications

c. As installed color coded wiring diagrams.

d. Operating procedures:

i. Routine and normal operating instructions.

ii. Sequences required.

iii. Special operating instructions.

e. Maintenance procedures:

i. Routine operations.
ii. Guide to "trouble-shooting".

iii. Disassembly, repair and reassembly.

iv. Adjustment and checking.

f. Manufacturer's printed operating and maintenance instructions.

g. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

h. Other data as required under pertinent sections of specifications.

4. Prepare and include additional data when the need for such data become apparent during instruction of CITY'S personnel.

D. Submittal Schedule

1. Submit two copies of completed data in final form no later than 30 days following the ENGINEER'S review of the last shop drawing and/or other submittal specified under SECTION 01340.
   a. One copy will be returned with comments to be incorporated into final copies.

2. Submit six (6) copies of approved manual in final form to the ENGINEER within 30 days after the reviewed copy is received.

3. Append six (6) copies of addendum to the operation and maintenance manuals as applicable and certificates as specified within 30 days after final inspection and start-up testing.

E. Instruction of City's Personnel

1. Prior to final inspection or acceptance, the manufacturer's representative shall fully instruct CITY'S designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

2. Operating and maintenance manual shall constitute the basis of instruction.
   a. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

-END-
SECTION 01740
WARRANTIES AND BONDS

I. SCOPE OF WORK

CONTRACTOR'S responsibility shall be to:

1. Compile warranties and bonds, as required in the Contract Documents and as specified herein.
2. Co-execute submittals when requested by ENGINEER.
3. Review submittals to verify compliance with Contract Documents.
4. Submit Warranties and Bonds to ENGINEER for review and transmittal to CITY.

II. IMPLEMENTATION

A. SUBMITTAL REQUIREMENTS

1. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
2. Quantity: Two original signed copies are required.
3. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
   a. Product of work item.
   b. Firm, with name of principal, address and telephone number.
   c. Scope.
   d. Date of beginning of warranty, bond or service and maintenance contract.
   e. Duration of warranty, bond or service maintenance contract.
   f. CONTRACTOR, name of responsible principal, address and telephone number.

B. FORMAT OF SUBMITTALS

Prepare in duplicate packets:

1. Paper: Size 8-1/2 inches x 11 inches, punch sheets for standard three-post binder.
   a. Fold larger sheets to fit into binders.
2. Cover: Identify each packet with typed or printed title WARRANTIES AND BONDS'. List:
a. Title of Project.

b. Name of CONTRACTOR.

3. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of two inches.

C. WARRANTIES AND BONDS

1. For all major pieces of equipment, submit a warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with CONTRACTOR'S for one (1) year, unless otherwise specified. Durations of systems' (i.e. moisture protection, conveyance, etc.) warranties shall be as specified elsewhere in the Contract Documents.

2. CONTRACTOR shall be responsible for obtaining certificate for equipment warranty for all major equipment provided which has at least 1 hp motor or which lists for more than $1,000. ENGINEER reserves the right to request warranties for equipment not classified as major. CONTRACTOR shall still warrant equipment not considered to be "major" in CONTRACTOR'S one-year warranty period even though certificates of warranty may not be required.

3. In the event that the equipment manufacturer or supplier is unwilling to provide a one-year warranty concurrent with the CONTRACTOR'S for one (1) year, CONTRACTOR shall obtain from the manufacturer a two year warranty commencing at the time of equipment delivery to the job site. This two-year warranty from the manufacturer shall not relieve CONTRACTOR of the one-year warranty.

4. CONTRACTOR shall be responsible for all costs of repairs of work which becomes defective during construction and the following warranty period.

5. Warranty shall cover all necessary labor, equipment and replacement parts resulting from faulty or inadequate design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of any or all equipment and components furnished by the manufacturer.

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