

CITY OF LAKE WORTH, FLORIDA

TECHNICAL SPECIFICATIONS AND DRAWINGS



IFB 16-111

**11TH AVE SOUTH – SOUTH A STREET TO SOUTH G STREET
GREENWAY IMPROVEMENTS PROJECT**

PROJECT NAME: 11TH AVE SOUTH GREENWAY IMPROVEMENTS

TECHNICAL SPECIFICATIONS

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SECTION 01010

SUMMARY OF WORK

PART 1 -GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work covered by these specifications comprises, in general, the furnishing of all labor, equipment, materials, and performing all operations to construct the project for the City of Lake Worth as described and specified further in the Technical Specifications and as shown on the Contract Drawings.
- B. Except as specifically noted, the Contractor shall provide and pay for:
 - 1 Labor, materials, tools, construction equipment, and machinery.
 - 2 Water and utilities required for construction.
 - 3 Other facilities and services necessary for proper execution and completion of the work.
- C. The Contractor shall comply with all codes, ordinances, rules, regulations, orders and other legal requirements of the City of Lake Worth.

1.02 DESIGN STANDARDS

- A. All work shall be governed by and shall conform to the Florida Department of Transportation Design Standards For Design, Construction, Maintenance and Utility Operations On The State Highway System dated 2010, the City of Lake Worth Engineering Standards Standard Details (latest edition), and the Manual On Uniform Traffic Control Devices (latest edition).

1.03 SILTATION AND BANK EROSION

- A. The Contractor shall take adequate precautions to minimize siltation and bank erosion in the vicinity of canals or ditches, in discharging well point systems or during other construction activities.

1.04 STORAGE OF MATERIALS

- A. Suitable storage facilities shall be furnished by the Contractor. All materials, supplies and equipment intended for use in the work shall be suitably stored by the Contractor to prevent damage from exposure, admixture with foreign substances, or vandalism or other cause. The Engineer will refuse to accept, or sample for testing, materials, supplies or equipment that have been improperly stored, as determined by the Engineer.
- B. Materials found unfit for use shall not be incorporated in the work and shall immediately be removed from the construction or storage site. Delivered materials shall be stored in manner acceptable to the Engineer before any payment for same will be made. Materials strung out along the line of construction will not be allowed unless the materials will be installed within one week from the time of unloading and stringing out.

1.05 PRESERVATION OF PROPERTY

- A. The Contractor shall preserve from damage all property along the line of the work, or which is in the vicinity of or is in any way affected by the work, the removal or destruction of which is not called for by the plans. Wherever such property is damaged due to the activities of the Contractor, it shall be immediately restored to its original condition by the Contractor at no cost to the Owner.
- B. In case of failure on the part of the Contractor to restore such property, or make good such damage for injury, the Owner may, after 48 hours notice to the Contractor, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the Contractor under this contract.

1.06 CLEAN UP

- A. The Contractor shall keep the construction site free of rubbish and other materials and restore to their original conditions those portions of the site not designated for the alteration by the Contract Documents. Clean up and restoration shall be accomplished on a continuing basis throughout the contract period and in such a manner as to maintain a minimum of nuisance and interference to the general public and residents in the vicinity of the work.
- B. The Contractor shall also remove, when no longer needed, all temporary structures and equipment used in his operation. It is the intent of this specification that the construction areas and those other areas not designated for alteration by the Contract Documents shall be immediately restored to original condition as upon completion of the project.

1.07 PUBLIC SAFETY AND CONVENIENCE

- A. The Contractor shall at all times so conduct his work as to ensure the least possible obstruction to traffic, or inconvenience to the general public and residents in the vicinity of the work. No road or street shall be closed to the public, except with the permission of the Engineer and other jurisdictional governmental authority, if any. Fire hydrants on or adjacent to the work shall be kept accessible. Provisions shall be made by the Contractor to ensure public access to sidewalks, public telephones, and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches. No open excavation shall be left overnight except during road closing. All open excavation within the roadway shall be backfilled and a temporary asphalt patch applied prior to darkness each day. A cold asphalt patch is acceptable.

1.08 SAFETY AND OSHA COMPLIANCE

- A. The Contractor shall comply in all respects with all Federal, State and Local safety and health regulations. Copies of the Federal regulations may be obtained from the U.S. Department of Labor, Occupation Safety and Health Administration (OSHA), Washington, DC 20210 or their regional offices.
- B. The Contractor shall comply in all respects with the applicable Workman's Compensation Law.

1.09 CONTRACTOR'S USE OF PREMISES

- A. Coordinate use of premises under direction of Engineer.
- B. Assume full responsibility for the protection and safekeeping of equipment and materials stored on the site.
- C. Move any stored Products, under Contractor's control, which interfere with operations of the Owner or separate Contractor.

PART 2 -PRODUCTS – NOT USED.

PART 3 -EXECUTION – NOT USED.

END OF SECTION

SECTION 01019

GENERAL REQUIREMENTS

PART 1 -GENERAL

1.01 EXISTING UTILITIES AND STRUCTURES:

The existing utilities and facilities shown have been located from the Owner's and other records. Guaranties are not made that all existing facilities are shown or that those shown are entirely accurate. The Contractor will assure himself of any utilities, structures or facilities prior to performing any Work. Prior to the start of Work, the Contractor will request the Owner to advise him of the location of their facilities in the vicinity and will notify the Engineer of any deviation between existing conditions and the drawings. The Contractor will assume liability for damages sustained or costs incurred because of his operations in the vicinity of existing utilities or structures. The Contractor will be solely responsible for the protection and maintenance of existing utilities to provide uninterrupted service to commercial and residential customers.

Existing utilities and facilities shall be located prior to commencement of each task.

It shall be the Contractor's responsibility to contact utility companies and call SUNSHINE at (800) 432-4770 at least 72 hours before starting construction so maintenance personnel can locate and protect facilities, if required by the utility company.

1.02 PRESERVING WATER QUALITY:

The Contractor will exercise extreme care to minimize degradation of water quality at the site. All necessary provisions will be taken to insure compliance with the water quality standards of the State of Florida.

The Contractor will take steps to collect and dispose of all sewage that leaks and/or spills during the performance of this contract. Any leakage or spillage will be cleaned up to the satisfaction of the Department of Environmental Protection.

1.03 PROTECTION OF EXISTING AND ADJACENT PROPERTIES:

Unless indicated otherwise, all shrubbery, paved streets and walks, fences and walls, adjacent structures and equipment will be fully protected against damage during each stage of the project. Any damage by the Contractor will be fully restored to original condition.

1.04 RESTORATION OF DAMAGED SURFACES, STRUCTURES AND PROPERTY:

Where pavement, trees, shrubbery, fences or other property or surface structures not designated as pay items, have been damaged, removed or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the Contract Documents, state laws, municipal ordinances or the specific direction of the Engineer, or through failure to employ usual and reasonable safeguards, such property and surface structures will be replaced or repaired at the expense of the Contractor to a condition equal to that before Work began within a time frame approved by the Engineer.

1.05 SUBSTITUTIONS:

For substitution of products in place of those specified, bidder must submit shop drawings and

technical data at least seven (7) calendar days prior to the Bid Opening date to substantiate “an approved equal” by the City, except specified items followed by the words “no substitution”.

Submit five copies of request for substitution. Include in request:

1. Complete Data substantiating compliance of proposed substitution with Contract Documents.
2. For Products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturers’ literature: 1) Product description. 2) Performance and test data. 3) Reference standards.
 - c. Samples.
 - d. Name and address of similar projects on which product was used, and date of installation.
3. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods.
4. Itemized comparison of proposed substitution with product or method specified.
5. Data relating to changes in construction schedule.
6. Relation to separate contracts.
7. Accurate cost data on proposed substitution in comparison with product or method specified.

1.06 CONSTRUCTION WATER:

The Contractor will be responsible for making application for hydrant meters with backflow preventers. The City will install necessary connections and backflow preventers at locations needed by the Contractor and approved by the Engineer. Maintenance of such is the responsibility of the Contractor.

Construction water will be paid for by the Contractor. In an event that damage to these facilities occurs, the Contractor will be responsible for all costs associated with their replacement at the City’s standard rate.

1.07 SANITARY FACILITIES:

If necessary, the Contractor shall provide temporary restroom facilities for field crews. Location of such facilities will be subject to the approval of the City. Existing City/Residence facilities are not available for use by the Contractor.

1.08 WORKING HOURS:

All work on this contract shall be conducted during normal working hours per City code on weekdays. No work shall be performed on weekends or City observed holidays. Inspection services needed beyond normal working hours will be paid for by the Contractor.

1.09 ASSEMBLIES OR UNITS:

Where the Contractor is required to furnish and install an assembly or unit, the Contractor shall furnish all component parts as required by the manufacturer of the unit.

1.10 ACCESS TO THE WORK SITE:

The Contractor may use only the roads and/or easements designated by the Owner for access to the work locations. The Contractor shall be responsible for maintaining, protecting and restoring the routes to the satisfaction of the Owner and Engineer.

1.11 SECURITY:

The Contractor shall be fully responsible for the safety and security of the construction area including any temporary measures required to maintain its protection. The Contractor will be responsible for any damages or theft incurred to his tools, equipment, machinery, and new work in-place that has not yet been fully accepted by the City.

1.12 TRENCH SAFETY ACT:

All work shall conform to the Florida Trench Safety Act. Contractor shall include in his price the cost of conforming to the Trench Safety Act.

1.13 PRECONSTRUCTION CONFERENCE/PROJECT PROGRESS MEETING:

- A. Before the Contractor starts the work, a conference will be held to establish procedures for handling Shop Drawings and other submittals, and to establish procedures for processing Applications for Payment, and to establish a working understanding among the parties as to the work.
- B. At each project progress meeting, the Contractor shall develop and submit for approval a progress schedule and phasing plan demonstrating complete fulfillment of all contract requirements including all activities of subcontractors, equipment vendors and suppliers. An updated schedule shall be submitted with each pay request.

1.14 TESTS:

Tests and analyses which are called for in the Specifications and/or Drawings (concrete, bacteriological, pressure and leakage, etc.) are to be performed by an Independent Testing Laboratory. Contractor shall include in his price the cost of performing required tests and analyses.

1.15 REMOVAL OF ALL TEMPORARY FACILITIES & RESTORATION OF SITE:

Upon completion of the work, it shall be the responsibility of the Contractor to remove all temporary facilities including, but not limited to, pumps, fences, signs, temporary power, materials or other debris. The site, adjacent properties, and Owner facilities shall be restored to their original condition.

1.16 VIDEOTAPING:

At least one (1) week prior to start of construction, the Contractor shall televise all areas where construction is to take place, including existing surface conditions within the project limits. Such video tapes shall be provided to the Engineer before construction commences. The CD shall serve as a record

of the existing conditions for disputes arising from restoration, and should therefore be taken along the line of construction at sufficient detail as necessary to clearly depict details of existing conditions.

The Contractor shall be responsible for providing the necessary equipment for the viewing of the video tapes at the Engineer's office for the duration of the project. All CDs shall be indexed and catalogued in such a manner that each photographed area is readily identifiable and shall also indicate the date and time (hour, minutes & seconds) on which the photograph was made. The Contractor shall also televise any unusual conditions encountered during construction that are not already a matter of photographic record. In any area where existing conditions cannot be determined by means of video tapes, the area shall be restored, as approved by the Engineer, at the Contractor's expense. All CDs shall become the property of the Owner.

The Contractor will be responsible for any repairs required as a result of construction in performance of this Contract. The Contractor will submit two (2) copies of the CD to the Engineer-of-Record prior to the start of construction.

1.17 SALVAGED MATERIAL:

Any existing equipment or material which is removed or replaced as a result of construction under this project may be designated as salvage by the City and, if so, shall be removed, cleaned, and delivered to the site in a protected place specified by the City. Any equipment or material not worthy of salvaging, as directed by the City, shall be disposed of by the Contractor at a suitable location. Upon request of the Engineer, Contractor shall submit evidence of proper disposal.

1.18 PROVISION FOR THE CONTROL OF DUST:

The Contractor shall comply with the City Ordinances regarding control of dust. The Contractor shall take the necessary steps to prevent objectionable blowing or drifting of dust, sand, and other debris where the construction occurs in residential, commercial, or other developed areas.

Extreme precautions shall be taken during construction to minimize the amount of dust created. Wetting the site or other means, as directed by the City, may be required for control of dirt.

1.19 NOISE CONTROL:

The Contractor shall comply with the City Ordinances regarding noise control. The Contractor shall make every effort to minimize noises caused by his operations. Equipment shall be equipped with hospital-grade silencers or mufflers designed to operate with the least possible noise.

1.20 OBSTRUCTION:

A. The attention of the Contractor is drawn to the fact that during excavation at the project site, the possibility exists of the Contractor encountering various utilities (water, chemical, electrical, gas, or other) not shown on the drawings. The Contractor shall exercise extreme care before and during excavation to locate and flag these lines so as to avoid damage to the existing lines. Should damage occur to an existing line, the Contractor shall repair the line at no cost to the City.

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

1.21 CLEAN-UP:

The Contractor shall maintain the site of the work in a neat condition. The Contractor shall remove all excess materials, excess excavated materials and all debris resulting from his operations within a time frame approved by the Engineer.

1.22 VISITS TO SITE BY OWNER'S REPRESENTATIVE:

The Owner's representative will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed work and to determine, in general, if the work is proceeding in accordance with the Contract Documents.

The Owner's representative's efforts will be directed toward providing for the Owner a greater degree of confidence that the completed work will conform to the drawings and these specifications. On the basis of such visits and on-site observations, the Owner's representative will keep the Owner informed of the progress of the work and will endeavor to guard the Owner against defects and deficiencies in the work.

1.23 LIMITATIONS ON OWNER'S REPRESENTATIVE RESPONSIBILITIES:

- A. Neither the Owner's representative's authority to act under these specifications and drawings or elsewhere in other documents nor any decision made by the Owner's representative in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the Owner's representative to the Contractor, any sub-Contractor, any manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the work.
- B. The Owner's representative shall not be responsible to the Contractor's means, methods, techniques, sequences or procedures of construction, or safety precautions and programs incident thereto, and the Owner's representative shall not be responsible for the Contractor's failure to perform the work in accordance with the drawings and these specifications.
- C. The Owner's representative shall not be responsible for the acts or omissions of the Contractor or of any sub-Contractors, or of any other persons at the site or otherwise performing any of the work.

1.24 WARRANTY:

The Contractor shall be responsible for defects in materials (including latent defects) or workmanship for a period of one (1) year after the date of final acceptance of the project by the Owner. Such defects include, but are not limited to, any settlement noted in backfill, fill, or in structures built over the backfill or fill during the warranty period in accordance with the GENERAL CONDITIONS and will be considered to be caused by improper compaction methods and shall be corrected by the Contractor at no cost to the Owner. Structures damaged by settlement shall be restored to their original condition by the Contractor at no cost to the Owner.

The Contractor shall furnish factory warranties on all equipment furnished for the performance and completion of the project against defects in materials and/or workmanship. The factory warranty shall become effective on the date of delivery and acceptance by the Owner. In the event of any defects in materials or workmanship, the Contractor shall replace said equipment at no cost to the Owner.

PART 2 -PRODUCTS -Not Used.

PART 3 -EXECUTION -Not Used.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

BASE BID – BASIS OF PAYMENT

PART 1 -GENERAL

1.01 BASIS FOR PAYMENTS

- A. The various major items of Work will be paid for in the lump sum allowance or unit cost amounts listed in the Schedule of Bid Items. All bid items shall include all labor, equipment, materials and testing as specified to construct the item, completed, tested and accepted. Attached is a description of the Work listed in the Schedule of Bid Items (B3) and is not intended to be complete and all-inclusive of the required work items. The Work shall include all miscellaneous and ancillary items necessary to construct a complete and functional Project.

1.02 SCHEDULE OF VALUES

- A. The descriptions below generally outline the scope of work required for those elements of the Work to be paid for under each lump sum or unit cost item listed in the Schedule of Bid Items. The Contractor shall submit a schedule of values.

1.03 BREAKDOWN OF BASE BID

- A. Where the Schedule of Bid Items show quantities, these quantities are primarily shown for bid evaluation purposes, and are believed to be reasonably accurate.
- B. In the event that the actual quantity of material installed exceeds the quantity shown, the CONTRACTOR will be paid the unit price shown for the quantity of the value shown on the bid breakdown.
- C. A credit will be similarly provided to the City by the CONTRACTOR for quantities less than those shown on the bid breakdown.

1.04 PAYMENTS

- A. Shall be in accordance with the provisions of the GENERAL CONDITIONS.

1.05 DEFECT ASSESSMENT:

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.

1.06 NON-PAYMENT FOR REJECTED PRODUCTS:

- A. Payment will not be made for any of the following:
- 1 Products wasted or disposed of in a manner that is not acceptable.
 - 2 Products determined as unacceptable before or after placement.
 - 3 Products not completely unloaded from the transporting vehicle.
 - 4 Products placed beyond the lines and levels of the required Work.
 - 5 Products remaining on hand after completion of the Work.
 - 6 Loading, hauling and disposing of rejected Products.
 - 7 Used Products and Materials

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION

BASE BID -BASIS OF PAYMENT

GENERAL CONDITIONS

3.01 SITE MOBILIZATION/GENERAL REQUIREMENTS (Bid Item 1)

- A. Payment for mobilization/general requirements will be made at the contract lump sum (LS) price bid for the item, which price shall be full compensation for all materials, labor, equipment, tools and all other incidentals necessary to complete this item. This item also includes all costs for mobilization, scheduling, bonds, insurance, temporary facilities, utilities, demobilization, NPDES compliance, trench safety compliance (if applicable) and all other costs required to complete the work, tested and accepted, which are not included in other bid items. Includes all required mobilizations for all items. The Contractor shall provide a full detailed breakdown of this item in his schedule of values.
- B. Payment item for mobilization/general requirements shall not exceed five percent (5%) of the contract price and shall be paid in increments in proportion to the total work completed.

3.02 MAINTENANCE OF TRAFFIC (Bid Item 2)

- A. Payment for costs for FDOT certified supplied MOT items, such as rental of cones, rental of barricades, rental of directional and other signage including rental of variable message boards, will be paid for under this pay item.
- B. Included in this item is the preparation of MOT plans that will be prepared for each phase of the work by the FDOT certified subcontractor that will be supplying the MOT barricades and signage. All MOT plans shall be reviewed and approved by the City.

3.03 SURVEY LAYOUT EVERY 100' OF RIGHT OF WAY (Bid Item 3)

- A. Payment for this item shall be on a Lump Sum (LS) basis and shall be paid in increments as the layout work is completed. The contractor shall layout the north and south right of way lines approximately every 100' to determine the right of way limits.
- B. All survey work shall be performed by an independent third party surveyor, licensed to practice in the State of Florida. The surveyor shall be retained by the Contractor and approved by the City.

3.04 VIDEOTAPING OF SITE CONDITIONS (PRE-CONSTRUCTION) & WEEKLY PHOTOS (Bid Item 4)

- A. Payment for videotaping (pre-construction) of the entire project area, including all buildings, etc. will be made at the contract lump sum (LS) price bid for this item and shall be paid in increments in proportion to the total work completed.
- B. This item shall also include weekly progress photos (hard copy & digital file).

EARTHWORK

3.05 **CLEARING AND GRUBBING (Bid Item 5)**

- A. This item shall be paid on a lump sum (LS) basis. The Contractor's price shall include full compensation for all labor, materials and equipment required for removal of all existing pavement and base (asphalt pavement of varying thickness), existing landscaping materials, existing sodding, existing sidewalk, existing curbing, existing signage, existing monuments, and all other items located within the project limits as indicated on the plans. This item includes all saw-cutting. The existing pavement and base shall be completely removed and shall be properly disposed of off-site at no additional cost to the Owner.
- B. This work shall include, but not be limited to, clearing, grubbing, scalping, removal of trees and stumps, hedges, shrubs, removal and disposal of existing vegetation and debris within the limits of the right-of-way, except such objects that are to remain or are to be removed in accordance with other sections of the contract documents.

3.06 **EARTHWORK (STRIP TOP 4") (Bid Item 6)**

- A. This item shall be paid on a lump sum (LS) basis. The Contractor's price shall include full compensation for all labor, materials and equipment required for removal of the top 4" of existing materials consisting of shellrock, crushed concrete and vegetative fill, etc. and replacement with clean fill.
- B. The price for this item shall also include all labor, materials and equipment required for finished grading the area between the edge of pavement and sidewalk in preparation of sodding in accordance with the plans and specifications.

GREENWAY IMPROVEMENTS

3.07 **6" STABILIZED SUB-GRADE – LBR 40 (Bid Item 7)**

- A. The unit price bid per square yard (SY) for the new stabilized sub grade (LBR 40 -6" thick) shall include all labor, material, and equipment required to construct the stabilized sub grade as shown on the detail drawings. The unit price shall include all excavation, preparation of sub grade, fine grading, placement of sub grade material, stabilization and compaction, rolling, brooming, and other miscellaneous work required to complete the work in accordance with Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition and the City of Lake Worth specifications. In lieu of 6" stabilized subgrade, 4" of crushed concrete or limerock is acceptable.

3.08 **CONCRETE MULTI-USE PATH (6" THICK) (Bid Item 8)**

- A. Payment for concrete multi-use path of 6 inch thickness as indicated on the plans and details shall be made at the contract unit price per square yard (SY) of 6' wide sidewalk installed and accepted. The contract unit price shall include compensation for all labor, material, and equipment required to install the sidewalk in accordance with the plans and specifications. The contract unit price shall also include subgrade compaction and all other miscellaneous work required to complete the work in accordance with the City of Lake Worth specifications.
- B. Payment shall be made for sidewalks constructed or replaced by authorization of the City

PROJECT MANAGER. Any sidewalk that is broken incidental to construction shall be replaced at the Contractor's expense.

3.09 CURB RAMPS WITH TACTILE SURFACE (ADA COMPLIANT) (Bid Item 9)

- A. Payment for this item shall be made on a per each (EA) price basis. The contract unit price shall include full compensation for furnishing and installing the ADA ramp, compliant with FDOT Index 304, of the type and at the locations shown on the Drawings. The curb ramps shall be in accordance with the plans, details, and specifications and shall be of the cast-in-place type. The contract unit price shall also include other miscellaneous work required to complete the work in accordance with Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition and the City of Lake Worth specifications.
- B. The additional sidewalk work associated with the curb ramps connecting the north ROW and south ROW shall be included in this item. Removal and replacement of existing sidewalk with new 4" thickened edge sidewalk.

3.10 MONOLITHIC CURB AND SIDEWALK (Bid Item 10)

- A. Payment for monolithic curb and sidewalk as indicated on the plans and details shall be made at the contract unit price per square yard (SY) installed and accepted. The contract unit price shall include compensation for all labor, material, and equipment required to remove existing sidewalk and install new monolithic curb and sidewalk per the detail in the plans. The contract unit price shall also include subgrade compaction and all other miscellaneous work required to complete the work in accordance with the City of Lake Worth specifications.

3.11 CONCRETE DRIVEWAY ACCESS AISLE (6" THICK) (Bid Item 11)

- A. Payment for concrete driveway access aisle of 6 inch thickness as indicated on the plans and details shall be made at the contract unit price per square yard (SY) of driveway access aisle installed and accepted. The contract unit price shall include compensation for all labor, material, and equipment required to install the driveway access aisle in accordance with the plans and specifications. The contract unit price shall also include subgrade compaction and all other miscellaneous work required to complete the work in accordance with the City of Lake Worth specifications.

3.12 CANOPY TREES AND ACCENT TREES (Bid Item 12-17)

- A. Payment for this item shall be made on a unit price per each (EA) basis. The unit price bid for this item shall be full compensation for all labor, materials and equipment required for soil preparation, excavation, planting, watering and associated work in accordance with the drawings and specifications. Tree material specifications are located in the plan set.

3.13 PLANT BEDDING (Bid Item 18)

- A. Payment for this item shall be made on a unit price per each (EA) basis. The unit price bid for this item shall be full compensation for all labor, materials and equipment required for soil preparation, excavation, planting, watering and associated work in accordance with the drawings and specifications. Plant bedding material specifications are located in the plan set.

3.14 SOD – BAHIA (Bid Item 19)

- A. Payment for this item shall be made on a unit price per square yard (SY) basis. The unit price bid for this item shall be full compensation for all labor, materials and equipment required for soil preparation and sod placement in accordance with the drawings and specifications. The unit price bid for this item shall include all watering for

planting and establishment of the sod until

3.15 4" MULCH (Bid Item 20)

- A. Payment for this item shall be made on a unit price per cubic yard (CY) basis. The unit price bid for this item shall be full compensation for all labor, materials and equipment required for soil preparation and mulch placement in accordance with the drawings and specifications.

IRRIGATION SYSTEM

3.16 IRRIGATION SYSTEM COMPLETE (Bid Item 21-29)

- A. Payment for this item shall be made on a unit price basis as detailed in the Schedule of Bid Items (B3). The unit prices for these items shall be full compensation for all labor, materials and equipment required for placement in accordance with the drawings and specifications. The unit prices for this item shall include all testing and operation of system until final acceptance by the OWNER.

SIGNAGE AND PAVEMENT MARKINGS

3.17 SIGNAGE AND PAVEMENT MARKINGS (THERMOPLASTIC) (Bid Item 30-32)

- A. Payment for this item shall be made on a unit price basis as detailed in the Schedule of Bid Items (B3) for thermoplastic crosswalk striping and crosswalk signage installed and accepted. The unit price shall include all measurements, materials, equipment, preparation and other miscellaneous work or materials required to complete the work in accordance with Florida Department of Transportation Section 711 and City of Lake Worth Specifications.

ALLOWANCES

3.18 GENERAL ALLOWANCE FUND (Bid Item GA1)

- A. The CONTRACTOR will be required to furnish documentation evidencing expenditures charged to the allowance account prior to the release of funds by the City. Furthermore, the CONTRACTOR shall obtain written pre-approval by the City's PROJECT MANAGER before the expenditure of these funds. Documentation for use of the contingency and allowance accounts shall be assembled by the CONTRACTOR and provided immediately to the City's PROJECT MANAGER. No allowance funds will be released by the City without the prior written approval of the City's PROJECT MANAGER.
- B. The allowance accounts are not for use by the CONTRACTOR to cover shortfalls in the CONTRACTOR'S lump sum bid amount.
- C. All uncommitted allowance funds will be returned to the City, per the contract, at the substantial completion of the project via deductive change order.

END OF SECTION

SECTION 01041

PROJECT COORDINATION

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Engineer will coordinate the work between Prime Contractors as required.
- B. The Contractor shall:
 - 1 Coordinate work of his employees and subcontractors.
 - 2 Expedite his work to assure compliance with schedules.
 - 3 Coordinate his work with work by Owner.
 - 4 Comply with orders and instructions of Engineer.

1.02 RELATED REQUIREMENTS

- A. Section 01152: Application for Payment.
- B. Section 01200: Project Meetings.
- C. Section 01310: Construction Schedules.
- D. Section 01340: Shop Drawings, Product Data and Samples.
- E. Section 01501: Construction Facilities and Temporary Controls.
- F. Section 01700: Project Closeout.

1.03 CONSTRUCTION ORGANIZATION AND START-UP

- A. Engineer shall establish on-site lines of authority and communications:
 - 1. Schedule and conduct pre-construction meeting and progress meetings as specified in Section 01200.
 - 2. Establish procedures for:
 - a. Submittals
 - b. Reports and records
 - c. Recommendations
 - d. Coordination of drawings
 - e. Schedules
 - f. Resolution of conflicts
 - 3. Interpret Contract Documents:
 - a. Transmit written interpretations to Contractors and to other concerned parties.
 - 4. Assist in obtaining permits and approvals:
 - a. Verify that contractor[s] and subcontractors have obtained inspections for work and for temporary facilities.

5. Control the use of Site:
 - a. Allocate space for Contractor's use for field offices, sheds, and work and storage areas.
6. Inspection and Testing:
 - a. Inspect work to assure performance in accord with requirements of Contract Documents.
 - b. Administer special testing and inspections of suspect Work.
 - c. Reject Work which does not comply with requirements of Contract Documents.

1.04 CONTRACTOR'S DUTIES

A. Construction Schedules:

1. Prepare a detailed schedule of basic operations.
 2. Monitor schedules as work progresses:
 - a. Identify potential variances between scheduled and probable completion dates of each phase.
 - b. Recommend to Owner adjustments in schedule to meet required completion dates.
 - c. Document changes in schedule; submit to Owner, Engineer and to involved subcontractors.
 3. Observe work of each subcontractor to monitor compliance with schedule.
 - a. Verify that labor and equipment are adequate for the work and the schedule.
 - b. Verify that product procurement schedules are adequate.
 - c. Verify that product deliveries are adequate to maintain schedule.
 - d. Report noncompliance to Engineer, with recommendation for changes.
- ### B. Process Shop Drawings, Product Data and Samples:
1. Prior to submittal to Engineer, review for compliance with Contract Documents:
 - a. Field dimensions and clearance dimensions.
 - b. Relation to available space.
 - c. Effect of any changes on the work of any subcontractor.
- ### C. Prepare Coordination Drawings as required to resolve conflicts and to assure coordination of the work of the subcontractors or the work effected by the subcontractors, or the work effected by special equipment requirements.
1. Submit to Engineer.
 2. Reproduce and distribute copies to concerned parties after Engineer review.

- D. Maintain Reports and Records at Job Site, available to Engineer and Owner.
 - 1. Daily log of progress of work.
 - 2. Records
 - a. Contracts
 - b. Purchase orders
 - c. Materials and equipment records
 - d. Applicable handbooks, codes and standards
 - 3. Maintain file of record documents

1.05 CONTRACTOR'S CLOSE-OUT DUTIES

- A. At completion of Work, conduct an inspection to assure that:
 - 1 Specified cleaning has been accomplished.
 - 2 Temporary facilities have been removed from site.
- B. Substantial Completion:
 - 1 Conduct an inspection to develop a list of Work to be completed or corrected.
 - 2 Assist Engineer in inspection.
 - 3 Supervise correction and completion of work of subcontractors.

1.06 ENGINEER'S CLOSE-OUT DUTIES

- A. Final Completion:
 - 1. When Contractor determines that Work is finally complete, conduct an inspection to verify completion of Work.
- B. Administration of Contract closeout:
 - 1 Receive and review contractor's final submittals.
 - 2 Transmit to Owner with recommendations for action.

PART 2 -PRODUCTS -Not Used.

PART 3 -EXECUTION -Not Used.

END OF SECTION

SECTION 01045

CUTTING AND PATCHING

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor shall be responsible for all cutting, fitting and patching, including related 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 and replace work not conforming to requirement of Contract Documents.
 - 5 Remove samples of installed work as specified for testing.
 - 6 Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.02 RELATED REQUIREMENTS

- A. Section 01010: Summary of Work.
- B. Section 01640: Products and Substitutions.
- C. Section 02225: Excavation, Backfill and Compaction.
- D. Section 02610: Pipe and Fittings.
- E. Section 03400: Precast Manholes. Inlets, Valves and Wetwells.

1.03 SUBMITTALS

- A. Submit a written request to Engineer well in advance of executing and cutting or alteration which affects:
- 1 Work of the Owner or any separate contractor.
 - 2 Structural value or integrity of any element of the project.
 - 3 Integrity or effectiveness of weather-exposed or moisture-resistant element or systems.
 - 4 Efficiency, operational life, maintenance or safety of operational elements.
 - 5 Visual qualities of sight-exposed elements.
- B. Request shall include:
1. Identification of the Project.
 2. Description of affected work.
 3. The necessity for cutting, alteration or excavation.
4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
5. Description of proposed work:
- a. Scope of cutting, patching, alteration, or excavation.
 - b. Trades who will execute the work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
6. Alternative to cutting and patching.

7. Cost proposal, when applicable.
8. Written permission of any separate contractor whose work will be affected.

- C. Should conditions of Work or the schedule indicate a change of products from original installation, contractor shall submit request for substitution as specified in Section 01640
– Products and Substitutions.
- D. Submit written notice to Engineer designating the date and the time the Work will be uncovered.

PART 2 -PRODUCTS

2.01 MATERIALS

- A. Comply with specifications and standards for each specific product involved.

PART 3 -EXECUTION

3.01 INSPECTION

- A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of Products, or performance of work.
- C. Report unsatisfactory or questionable conditions to Engineer in writing; do not proceed with work until Engineer has provided further instructions.

3.02 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
- B. Provide devices and methods to protect other portions of Project from damage.
- C. Provide protection from elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.

3.03 PERFORMANCE

- A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
- C. Employ original Installer or Fabricator to perform cutting and patching for:
 - 1 Weather-exposed or moisture-resistant elements.
 - 2 Sight-exposed finished surfaces.
- D. Execute fittings and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- E. Restore work which has been cut or removed; install new products to provide completed work in accord with requirements of Contract documents.
- F. Fit work airtight to pipes, sleeves, ducts, conduit or other penetrations through surfaces.
- G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes;
 - 1 For continuous surfaces, refinish to nearest intersection.
 - 2 For an assembly, refinish entire unit.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 -GENERAL

1.01 WORK INCLUDED:

- A. This section covers all work required for the verification of preconstruction conditions, layout of proposed utility improvements, quality control and data gathering for the preparation of post-construction record drawings.

1.02 SUBMITTALS:

- A. Submit name, address and telephone number of Florida Registered Land Surveyor before starting work.
- B. ~~Submit copies of all post-construction record drawings and certificate signed by the approved Florida Registered Land Surveyor indicating that the elevations and locations of the work are as the work was constructed.~~

1.03 DEFINITIONS:

- A. ~~Location: "As-Built" location station, offset distance and direction relative to the existing construction baseline.~~
- B. ~~Elevation: "As-Built" elevation relative to the National Geodetic Vertical Datum of 1929 (NGVD).~~

1.04 QUALITY ASSURANCE:

- A. Land surveyor employed shall be registered in the State of Florida and acceptable to the City.
- B. Where applicable, employ a professional engineer of the discipline required for specific source on project, licensed in the State of Florida.

1.05 PROJECT RECORD DOCUMENTS DATA:

- A. ~~Conform to the requirements in Section 01720 Record Drawings.~~
- B. ~~Submit final record drawings prior to final pay application at completion of project as specified in Section 01700 - Contract Closeout.~~
- C. ~~Provide in tabular form, based on the obtained applicable field data, the final "As-Built" quantities for the project. "As-Built" quantities shall be referenced to the schedule of bid items and their units of measure as indicated in the Contractor's bid.~~

PART 2 -PRODUCTS – Not used

PART 3 -EXECUTION

3.01 EXAMINATION:

- A. Verify locations of survey control points prior to starting work. Promptly notify Engineer of any discrepancies discovered.

3.02 SURVEY REFERENCE POINTS:

- A. Protect survey control points prior to starting site work; preserve permanent reference points during construction. Make no changes without prior written notice to the City.
- B. Promptly report to the City the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control.
- C. Provide affidavit from approved Florida Registered Surveyor that all survey control points were re-established following completion of construction.

3.03 SURVEY REQUIREMENTS:

- A. The Engineer will furnish Contractor with horizontal and vertical control information. Responsibility for construction of the Work to correct dimensions, alignment and grade shall be the Contractor's. Additional control points, as applicable, shall be provided for and established by surveyor.
- B. Establish and define all baselines. Provide necessary stationing along baseline. All ends and intersections of baselines shall be tied to a minimum of two permanent features.
- C. Establish locations of right-of-way lines and property lines as applicable and locations and elevations of proposed improvements. Locate and lay out by instrumentation and similar appropriate means:
 - ~~1 All utility improvements including locations and elevation.~~
 - ~~2 Pipeline deflections/conflicts.~~
 - ~~3 The locations and elevations as applicable to valves, fitting, services and connections to existing utilities.~~
 - ~~4 Alignment and cross section of roadway, driveway and sidewalk restorations. As applicable, roadways, driveways and sidewalks shall be reconstructed to existing horizontal and vertical dimensions, unless shown otherwise.~~
- D. ~~Periodically verify layouts by same means indicated above.~~
- E. ~~As built information of all utilities installed within the limits of pavement must be obtained prior to initial backfilling of trench.~~

3.04 SURVEYS FOR MEASUREMENT AND PAYMENT:

- A. ~~Final project record drawings with "as built" information of the installed utility systems and all bid quantities shall be submitted and approved by the City's representative prior to application for final payment.~~

~~B. "As-Built" quantity data shall be presented in tabular form and reference the schedule of bid items and their respective units of measure as given in the contract documents.~~

~~C. "As-Built" information shall be used by the Contractor to prepare his final statement of accounts as specified in Section 01700 — Contract Closeout.~~

D. Current "as-built" information shall be available for the City's use for evaluation of partial pay requests.

END OF SECTION

SECTION 01065

PERMITS AND FEES

PART 1 -GENERAL

~~1.01 Unless otherwise specified, the contractor shall obtain and pay for any permits and licenses related to his work as provided for in the general conditions, except as otherwise provided herein. The contractor shall obtain all required city permits including, but not limited to, right of way permits prior to starting construction.~~

~~1.02 All permits obtained by the City are included in the bid package. A copy of the permits shall be posted at the site at all times during construction. The Contractor shall be responsible for familiarizing himself with the permits and shall abide by the permit conditions at all times.~~

~~1.03 Work shall be conducted, and shall result in construction of the improvements of this project, in full accordance with the conditions of the permits granted for the project.~~

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01068

DEFINITIONS AND STANDARDS

PART 1 -GENERAL

1.01 DEFINITIONS:

A. Except as specifically defined otherwise, the following definitions supplement definitions of the Contract, General Conditions, Supplementary Conditions, and other general contract documents, and apply to the work.

1. Owner: **City of Lake Worth**

2. General Requirements: Provision of Division 1 sections of these specifications.

3. Indicated: Shown on drawings by notes, graphics or schedules, or written into other portions of Contract Documents. Terms such as "shown," "noted," "Scheduled," and "Specified" have same meaning as "indicated," and are used to assist the reader in locating particular information.

4. Directed, Requested, Approved, Accepted, etc.: These terms imply "by the Engineer," unless otherwise indicated.

5. Approved by the Engineer: In no case releases Contractor from responsibility to fulfill requirements of Contract Documents.

6. Project Site: Space available to Contractor at location of project, either exclusively or to be shared with separate contractors, for performance of the work.

7. Furnish: Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar subsequent requirements.

8. Install: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.

9. Provide: Furnish and install, complete and ready for intended use.

10. Engineer: Engineer of Record

11. Installer: Entity (firm or person) engaged to install work, by Contractor, subcontractor, or sub-subcontractor. Installers are required to be skilled in work they are engaged to install.

12. Specification Text Format: Underscoring facilitates scan reading, or other meaning. Imperative language is directed at contractor, unless otherwise noted.

13. Overlapping/Conflicting Requirements: Most stringent (generally) language written directly into Contract Documents is to be used. Overlapping/conflicting requirements do not indicate that a less stringent requirement might be acceptable. Refer uncertainties to Engineer for decision before proceeding.

14. Where optional requirements are specified in a parallel manner option is intended to be Contractor's unless otherwise indicated.

15. Minimum Requirements: Indicated requirements are for a specific minimum acceptable level of quality/quantity, as recognized in the industry. Actual work must comply (within specified tolerances), or may exceed minimums within reasonable limits. Refer uncertainties to Architect/Engineer before proceeding.

16. Abbreviations, Plural Words: Abbreviations, where not defined in Contract Documents, will be interpreted to mean the normal construction industry terminology, determined by recognized grammatical rules, by the Engineer. Plural words will be interpreted as singular and singular words will be interpreted as plural where applicable for context of Contract Documents.

17. Testing Laboratory: An independent entity engaged for the project to provide inspections, tests, interpretations, reports, and similar services.

1.02 STANDARDS AND REGULATIONS:

- A. Industry Standards: Applicable standards of construction industry have same force and effect on performance of the work as if copied directly into Contract Documents or bound and published herewith. Standards referenced in Contract Documents or in governing regulations have precedence over non-referenced standards, insofar as different standards may contain overlapping or conflicting requirements. Comply with standards in effect as of date of Contract Documents, unless otherwise indicated.
- B. Abbreviations: Where abbreviations or acronym are used in Contract Documents, they mean the well recognized name of entity in building construction industry. Refer uncertainties to Engineer before proceeding.
- C. Trade Union Jurisdictions: Maintain current information on jurisdiction matters, regulations, actions, and pending actions; and administer/supervise performance of work in a manner which will minimize possibility of dispute, conflicts, delays, claims, or losses.
- D. Trades: Except as otherwise indicated, the use of titles such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirement apply exclusively to work by tradesperson of that corresponding generic name.

PART 2 -PRODUCTS -Not Used.

PART 3 -EXECUTION -Not Used.

END OF SECTION

SECTION 01090

REFERENCE STANDARDS

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

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

1.02 QUALITY ASSURANCE

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

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

1.03 ABBREVIATIONS, NAMES AND ADDRESSES OF ORGANIZATIONS

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

AASHTO American Association of State Highway and Transportation Officials 444 North
Capitol Street, N.W., Suite 249 Washington, D.C. 20001

ACI American Concrete Institute Box 9094 Farmington Hills, MI 48333-9094

AISC American Institute of Steel Construction One East Wacker Drive, Suite 700 Chicago, IL
60601-1802

AISI American Iron and Steel Institute 25 Massachusetts Ave., N.W., Suite 800. Washington,
D.C. 20001

ANSI American National Standards Institute 25 West 43rd Street, 4th Floor New York, N.Y.
10036

ASHRAE American Society of Heating, Refrigeration and Air-Conditioning Engineers 1791
Tullie Circle, N.E. Atlanta, GA 33029

ASME	American Society of Mechanical Engineers Three Park Avenue New York, N.Y. 10016-5990
ASTM	ASTM International 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235
AWS	American Welding Society 550 N.W. LeJeune Road Miami, FL 33126
CRSI	Concrete Reinforcing Steel Institute 933 North Plum Grove Road Schaumburg, IL 60173-4758
FM	Factory Mutual 270 Central Avenue Johnston, RI 02919-4949
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, D.C. 20407
IEEE	Institute of Electrical and Electronics Engineers Standards Association 501 Hoes Lane, Third Floor Piscataway, NJ 08855
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
NEMA	National Electrical Manufacturer's Association 1300 North 17 th Street, Suite 1752 Rosslyn, VA 22209
NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, Massachusetts 02169- 7471

NIST	National Institute of Standards and Technology 100 Bureau Drive, Stop 2100 Gaithersberg, MD 20899-2100
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
PCI	Prestressed Concrete Institute 20 West Adams Street, #2100 Chicago, IL 60606
PS	Product Standard U.S. Department of Commerce Washington, D.C. 20203
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021
SJI	Steel Joist Institute 234 W. Cheves Street Florence, SC 29501
SMA	CNA Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, VA 20151-1219
UL	Underwriter's Laboratories, Inc. 333 Pfingsten Road Northbrook, IL 60062-2096

- B. When no reference is made to a code, standard, or specification, the standard specifications of the ASTM, the ANSI, the ASME, the IEEE, or the NEMA shall govern.
- C. Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.
- D. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on site by the Contractor.

PART 2 -PRODUCTS -Not used.

PART 3 -EXECUTION -Not used.

END OF SECTION

SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 -GENERAL

1.01 SCOPE OF WORK

- A. The work covered by this Section consists of furnishing all labor, materials and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.
- D. These Specifications are intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings.
- E. These are general guidelines. It is the CONTRACTOR's responsibility to determine the specific construction techniques to meet these guidelines.

1.02 APPLICABLE REGULATIONS

- A. Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

1.03 NOTIFICATIONS

- A. The ENGINEER will notify the CONTRACTOR in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the CONTRACTOR in writing, through the ENGINEER, of any non-compliance with State or local requirements. The CONTRACTOR shall, after receipt of such notice from the ENGINEER or from the regulatory agency through the ENGINEER, immediately take corrective action. Such notice, when delivered to the CONTRACTOR or his authorized representative at the site of the Work, shall be deemed sufficient for the purpose. If the CONTRACTOR fails or refuses to comply promptly, the OWNER may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the CONTRACTOR unless it is later determined that the CONTRACTOR was in compliance.

1.04 IMPLEMENTATION

- A. Prior to commencement of the Work, meet with the ENGINEER to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.
- B. Remove temporary environmental control features, when approved by the ENGINEER and incorporate permanent control features into the project at the earliest practicable time.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION

3.01 EROSION CONTROL

- A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented. Ditches around construction areas shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches shall be backfilled and the ground surface restored to its original condition.

3.02 PROTECTION OF SURFACE WATERS

- A. Care shall be taken to prevent, or reduce to a minimum, any damage to any surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such surface waters. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the surface water, shall not be directly returned to the surface water. Such waters will be diverted through a settling basin or filter before being directed into the surface waters.
- B. The CONTRACTOR shall not discharge water from testing operations directly into any surface water.
- C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the OWNER. CONTRACTOR shall submit two copies of approved contingency plans to the ENGINEER

3.03 PROTECTION OF LAND RESOURCES

- A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of construction, that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

- B. Outside of areas requiring earthwork for the construction of the new facilities, the CONTRACTOR shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the ENGINEER. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The CONTRACTOR shall in any event be responsible for any damage resulting from such use.
- C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the CONTRACTOR's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.
- D. Any trees or other landscape feature scarred or damaged by the CONTRACTOR's equipment or operations shall be restored as nearly as possible to its original condition. The ENGINEER will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.
- 1 All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
 - 2 Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the CONTRACTOR and are beyond saving in the opinion of the ENGINEER, shall be immediately removed and replaced.
- E. The locations of the CONTRACTOR's storage and other construction buildings, required temporarily in the performance of the Work, shall be cleared as portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the ENGINEER and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the ENGINEER
- F. If the CONTRACTOR proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least ten-days prior to scheduled start of such temporary work:
- 1 A layout of all temporary roads, excavations and embankments to be constructed within the work area.
 - 2 Details of temporary road construction.
 - 3 Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

4 A landscaping drawing showing the proposed restoration of the area. Removal of any trees and shrubs outside the limits of existing clearing area shall be indicated. The drawing shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the CONTRACTOR's approved drawings shall be made only with the written approval of the ENGINEER. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.

- G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess waste materials, or any other vestiges of construction as directed by the ENGINEER. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon.
- H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.04 PROTECTION OF AIR QUALITY

- A. Burning -The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- B. Dust Control -The CONTRACTOR will be required to maintain all excavations, embankments, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.
- C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the ENGINEER.
- D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the CONTRACTOR must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the ENGINEER.

3.05 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.06 NOISE CONTROL

- A. The CONTRACTOR shall make every effort to minimize noises caused by his/her operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with State and Federal regulations.

END OF SECTION

SECTION 01152

APPLICATION FOR PAYMENT

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit Applications for Payment to Engineer in accordance with the schedule established by Conditions of the Contract and herein.

1.02 RELATED REQUIREMENTS

- A. Agreement Between Owner and Contractor: Lump Sum and Unit Price.
- B. Conditions of the Contract: Progress Payments, Retainage and Final Payment.
- C. Section 01025: Measure and Payment.
- D. Section 01153: Change Order Procedures.
- E. Section 01370: Schedule of Values.
- F. Section 01700: Project Closeout.

1.03 FORMAT AND DATA REQUIRED

- A. Submit applications in the form required by Owner, with itemized data typed on 8-1/2 inch x 11 inch white paper continuation sheets.
- B. Provide itemized data on continuation sheet:
 - 1. Format, schedules, line items and values: Those of the Schedule of Values accepted by Engineer.
- C. ~~Provide signed and sealed "As-Builts" by Surveyor with each pay request.~~

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form:
 - 1 Fill in required information, including that for Change Orders executed prior to date of submittal of application.
 - 2 Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
 - 3 Execute certification with signature of a responsible officer of Contract firm.
- B. Continuation Sheets:
 - 1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
 - 2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
 - a. Round off values to nearest dollar, or as specified for Schedule of Values.
 - 3. List each Change Order executed prior to date of submission at the end of the continuation sheets.

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

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:

1. Project
 2. Application number and date.
 3. Detailed list of enclosures.
 4. For stored products:
 - a. Item number and identification as shown on application.
 - b. Description of specific material.
- B. Submit one copy of data and cover letter for each copy of application.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in Application form as specified for progress payments.
- B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 -Project Closeout.

1.07 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to Engineer at the times stipulated.
- B. Number: Four (4) copies of Application.
- C. When Engineer finds Application properly completed and correct, he will transmit certificate for payment to Owner, with copy to Contractor.

PART 2 -PRODUCTS -Not used.

PART 3 -EXECUTION -Not used. END OF SECTION

SECTION 01153

CHANGE ORDER PROCEDURES

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDE

- A. Promptly implement Change Order Procedures
 - 1 Provide full written data required to evaluate changes.
 - 2 Maintain detailed records of work done on a time-and-material/force account basis.
 - 3 Provide full documentation to Engineer on request.
- B. Designate in writing the member of Contractor's organization:
 - 1 Who is authorized to accept changes in the Work.
 - 2 Who is responsible for informing others in the contractor's employ of the authorization of changes in the Work.
- C. Owner will designate in writing the person who is authorized to execute Change Orders.

1.02 RELATED REQUIREMENTS

- A. Agreement: The amount of established unit prices.
- B. Drawings and general provisions of the Contract, including the General Conditions and Terms and Division 1 Specification sections, apply to this section.
- C. Terms and Conditions of the Contract (See GC 42 of the General Conditions and Terms):
 - 1 Methods of determining cost or credit to Owner resulting from changes in Work made on a time-and-materials basis.
 - 2 Contractor's claims for additional costs.
- D. Section 01025: Measurement and Payment
- E. Section 01152: Application for Payment
- F. Section 01300: Submittals
- G. Section 01310: Construction Schedules
- H. Section 01640: Products and Substitutions
- I. Section 01700: Project Closeout
- J. Section 01720: Record Documents

1.03 DEFINITIONS

- A. Change Order: See General Conditions and Supplementary Conditions.
- B. Construction Change Authorization: A written order to the Contractor, signed by Owner and Engineer, which amends the Contract Documents as described, and authorizes Contractor to proceed with a change which affects the Contract Sum or the Contract Time, for inclusion in a subsequent Change Order.
- C. Field Order: A written order, instructions, or interpretations, signed by Engineer making minor changes in the Work not involving a change in Contract Sum or Contract Time.

1.04 PRELIMINARY PROCEDURES

- A. Owner or Engineer may initiate changes by submitting a proposal Request to Contractor. Request will include the following:
 - 1 Detailed description of the Change, Products, and location of the change in the Project.
 - 2 Supplementary or revised Drawings and Specifications.
 - 3 The projected time span for making the change, and a specific statement as to whether overtime work is, or is not, authorized.
 - 4 A specific period of time during which the requested price will be considered valid.
 - 5 Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress.
- B. Contractor may initiate changes by submitting a written notice to Engineer, containing:
 - 1 Description of the proposed changes
 - 2 Statement of the reason for making the changes.
 - 3 Statement of the effect on the Contract Sum and the Contract Time.
 - 4 Statement of the effect on the work of separate contractors.
 - 5 Documentation supporting any changes in Contract Sum or Contract Time, as appropriate.

1.05 CONSTRUCTION CHANGE AUTHORIZATION

- A. In lieu of Proposal Request, Engineer may issue a "Construction Change Directive" (CCD) for Contractor to proceed with a change for subsequent inclusion in a Change Order.
- B. Authorization will describe changes in the work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate the method of determining any change in the Contract Sum and any change in Contract Time.
- C. Owner and Engineer will sign and date the CCD as authorization for the Contractor to proceed with the Changes.
- D. Contractor shall sign and date the Construction Change Authorization to indicate agreement with the terms therein.

1.06 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A. Support each quotation for a lump sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.
- B. On request, provide additional data to support time and cost computation including the following:
 - 1 Labor required.
 - 2 Equipment required.
 - 3 Products required:
 - 4 Recommended source of purchase and unit cost.
 - 5 Quantities required.
 - 6 Taxes, insurance bonds.
 - 7 Credit for work deleted from Contract, similarly documented.
 - 8 Overhead and profit.
 - 9 Justification for any change in Contract Time.
- C. Support each claim for additional costs, and for work done on a time-and-material / force account basis, with documentation as required for a lump sum proposal, plus the following additional information:
 - 1. Name of the Owner's authorization agent who ordered the work, and date of the order.
 - 2. Dates and time work performed, and by whom.
 - 3. Time record, summary of hours worked, and hourly rates paid.
 - 4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, listing quantities.
 - c. Subcontracts.
 - 5. Document requests for substitutions for Products as specified in Section 01640.

1.07 PREPARATION OF CHANGE ORDERS

- A. Engineer will prepare each Change Order.
- B. Form: Change Order format provided in the Contract Documents.
- C. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of change.
- D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

1.08 LUMP SUM / FIXED PRICE CHANGE ORDER

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

- B. Engineer's Proposal Request and Contractor's responsible Proposal as mutually agreed upon between Owner and Contractor.
- C. Contractor's Proposal for a change, as recommended by Engineer.
- D. Owner and Engineer will sign and date the Change Order as authorization for the contractor to proceed with the changes.
- E. Contractor shall sign and date the Change Order to indicate agreement with the terms therein.

1.09 UNIT PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1 Engineer definition of the scope of the required changes.
 - 2 Contractor's Proposal for a change, as recommended by Engineer.
 - 3 Survey of completed work
- B. The amount of the unit prices shall be:
 - 1 Those stated in the Agreement.
 - 2 Those mutually agreed upon between Owner and Contractor.
- C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
 - 1 Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
 - 2 Contractor shall sign and date the Change Order to indicate agreement with the terms therein.
- D. When quantities of the items cannot be determined prior to start of the work:
 - 1 Engineer or Owner will issue a Change Order directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 - 2 At completion of the change, Engineer will determine the cost of such work based on the unit prices and quantities used.
 - 3 Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
 - 4 Engineer will sign and date a second Change Order to establish the change in Contract Sum and in Contract Time.
 - 5 Owner and Contractor will sign and date the second Change Order to indicate their agreement with the terms therein.

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

- A. Engineer and Owner will issue a Construction Change Authorization directing Contractor to proceed with the changes.
- B. At completion of the change, Contractor shall submit itemized accounting and supporting data as provided in the Article "Documentation of Proposals and Claims" of this Section.

C. Engineer will determine the allowable cost for such work, as provided in General Conditions and Supplementary Conditions.

D. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.

E. Owner and Contractor will sign and date the Change Order to indicate their agreement therewith.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Contractor shall periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of Work, and to record the adjusted Contract Sum.

B. Contractor shall periodically revise the Construction Schedule to reflect each change in Contract Time.

1. Revise sub-schedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION -Not Used.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The ENGINEER shall schedule and administer pre-construction meetings, periodic progress meetings, and specially called meetings throughout progress of the Work.
- 1. Prepare agenda for meetings.
- 2. Distribute written notice of each meeting four days in advance of meeting date.
- 3. Make physical arrangements for meetings.
- 4. Preside at meetings.
- 5. Record the minutes; include significant proceedings and decisions.
- 6. Reproduce and distribute copies of minutes within ten (10) working days after each meeting.
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
- B. Representatives of CONTRACTORS, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. The CONTRACTOR shall attend meetings to ascertain that work is expedited and consistent with Contract Documents and construction schedules.

1.02 RELATED REQUIREMENTS

- A. Section 00100: Instructions to Bidders.
- B. Section 01310: Construction Schedules.
- C. Section 01300: Submittals.
- D. Section 01720: Record Drawings

1.03 PRE-CONSTRUCTION MEETING

- A. Schedule a preconstruction meeting no later than 15 days after date of Notice to Award.
- B. Location: A central site, convenient for all parties, designated by the OWNER.
- C. Attendance:
 - 1 OWNER's Representative.
 - 2 ENGINEER and his professional consultants, if any.
 - 3 Resident Project Representative.
 - 4 CONTRACTOR's Superintendent.
 - 5 Major Subcontractors.
 - 6 Major suppliers.

- 7 Utilities
- 8 Others as appropriate.

D. Suggested Agenda:

1. Distribution and discussion of:

- a. List of major subcontractors and suppliers.
- b. Projected Construction Schedules.

2. Critical work sequencing.

3. Major equipment deliveries and priorities.

4. Project Coordination.

- a. Designation of responsible personnel.

5. Procedures and processing of:

- a. Field decisions.
- b. Proposal requests.
- c. Submittals.
- d. On-going "As-Built" Surveys
- e. Change Orders.
- f. Applications for Payment.

6. Adequacy of distribution of Contract Documents.

7. Procedures for maintaining Record Documents.

8. Use of premises:

- a. Office, work and storage areas.
- b. OWNER's requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Safety and first-aid procedures.

12. Security procedures

13. Housekeeping procedures.

14. Miscellaneous

1.04 PROGRESS MEETINGS

- A. Schedule regular periodic progress meetings. The progress meetings will be held every 14 days with the first meeting 14 days after the pre-construction meeting or 14 days after the date of Notice to Proceed.
- B. Hold additional meetings as required by progress of the Work.
- C. Location of the meetings: Public Services Department Conference Room
- D. Attendance:
 - 1 OWNER'S representatives.
 - 2 ENGINEER, and his professional consultants as needed.
 - 3 Subcontractors as appropriate to the agenda.
 - 4 Suppliers as appropriate to the agenda.
 - 5 Others as appropriate.
- E. Suggested Agenda:
 - 1. Review and approval of minutes of previous meeting.
 - 2. Review of work progress since previous meeting.
 - 3. Field observations, problems, and conflicts.
 - 4. Problems which impede Construction Schedule.
 - 5. Review of off-site fabrication, delivery schedules.
 - 6. Corrective measures and procedures to regain projected schedule.
 - 7. Revisions to Construction Schedule.
 - 8. Progress, schedule, during succeeding work period.
 - 9. Coordination of schedules.
 - 10. Review submittal schedules; expedite as required.
 - 11. Maintenance of quality standards.
 - 12. Pending changes and substitutions.
 - 13. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts of the Project.
 - 14. Review of As-Builts, if requested by the Engineer.
 - 15. Other business.
 - 16. Construction schedule.
 - 17. Critical/long lead items.

F. The CONTRACTOR is to attend progress meetings and is to study previous meeting minutes and current agenda items in order to be prepared to discuss pertinent topics, such as deliveries of materials and equipment, progress of the Work, etc.

G. The CONTRACTOR is to provide a current submittal log at each progress meeting in accordance with Section 01300.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION -Not used.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 -GENERAL

1.01 DESCRIPTION OF REQUIREMENTS:

- A. The types of submittals controlled by these general requirements include shop drawings, procedure manuals, samples and miscellaneous work-related submittals. The individual submittal requirements are specified herein and in applicable sections for each unit of work.

1.02 GENERAL SUBMITTAL REQUIREMENTS:

A. Coordination and Sequencing:

- 1. The Contractor shall coordinate preparation and processing of submittals with the performance of the work so that the work will not be delayed by submittals. The Contractor shall coordinate and sequence different categories of submittals for the same work, and for interfacing units of work, so that one will not be delayed for coordination with another. No extension of time will be allowed because of failure to properly coordinate and sequence submittals.

B. Preparation of Submittal:

- 1. Provide permanent marking on each submittal to identify project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals. Each submittal shall clearly state where the item is to be installed. Package each submittal appropriately for transmittal and handling. Submittals which are received from sources other than through the Contractor's office will be returned without action. All results of testing by independent labs or agencies shall be submitted to the Engineer. This shall include both passing and failing tests.

1.03 SPECIFIC CATEGORY SUBMITTAL REQUIREMENTS:

- A. Except as otherwise indicated in individual work sections, comply with general requirements specified herein for each indicated category of submittal.

- 1.

1.04 SHOP DRAWINGS AND SAMPLES:

- A. As soon as practicable and within thirty (30) days after the date of execution of the Contract, the Contractor, in conformance with the conditions of the contract, shall submit to the Engineer for approval, four (4) copies (in addition to those copies necessary for his own requirements) of the shop drawings.

- B. Shop drawings submitted to the Engineer for his review, shall first be checked and approved by the Contractor, as indicated by a "Checked" stamp marked "Approved" on each copy of the shop drawing. Shop drawings received without the Contractor's "Checked and Approved" stamp will be returned without further action.

C. Shop drawings shall be submitted, but not be limited to, the following:

1. Pipe and Fittings (all types & materials)
2. Concrete Mix Design
3. Maintenance of Traffic Plan
4. Asphalt Design
5. Testing Lab and Procedures
6. Precast Manholes & Inlets
7. Coating Systems
8. Grating and Manhole Covers
9. Valves (all types & materials)
10. Street Light Poles, Fixtures, and Conduits (N/A)
11. Decorative Pavers and Split Face Blocks (N/A)
12. Traffic signs

D. Product Data:

1 Collect required data into one submittal for each unit of work or system; and mark each copy to show which choices and options are applicable to the project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. Maintain one set of product data for each submittal at the project site, available for reference by the Engineer. For purposes of this submittal, manufacturer's fabrication drawings shall be synonymous with shop drawings.

2 The Contractor shall not submit product data, or allow its use on the project, until compliance with requirements of the Contract Documents has been confirmed. Submittal is for information and record use only, unless otherwise indicated.

1.05 DOCUMENTS:

A. Maintain at the job site one copy of all drawings, specifications; addenda; approved shop drawings; change orders; field orders; other contract modifications; and other approved documents submitted by the Contractor in compliance with various sections of the specifications. Each of these Project Record Documents shall be clearly marked "Project Record Copy" and maintained in good condition; available at all times for review by the Engineer and not used for construction purposes.

1.06 BOND AND COMPLETED OPERATION INSURANCE:

A. Prior to final payment, the Contractor shall submit proof that bonds and completed operations insurance are in effect as required by the GENERAL CONDITIONS.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION -Not used.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Promptly after award of the Contract and within ten (10) days after the effective date of the Agreement, prepare and submit to the ENGINEER estimated construction progress schedules for the Work, with subschedules of related activities which are essential to its progress.
- B. Submit revised progress schedules on a monthly basis.
- C. No partial payments shall be approved by the ENGINEER until there is an approved construction progress schedule on hand.
- D. The CONTRACTOR shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the CONTRACTOR shall have direct project control and complete authority to act on behalf of the CONTRACTOR in fulfilling the commitments of the CONTRACTOR's schedule.

1.02 RELATED REQUIREMENTS

- A. Section 12: Standard General Conditions of the Construction Contract.
- B. Section 01010: Summary of Work.
- C. Section 01200: Project Meetings.
- D. Section 01300: Submittals.

1.03 FORM OF SCHEDULES

- A. Prepare schedules in the form of a horizontal bar chart or critical path method.
 - 1 Provide separate horizontal bar for each trade or operation within each structure or item.
 - 2 Horizontal time scale: In weeks from start of construction and identify the first work day of each month.
 - 3 Scale and spacing: To allow space for notations and future revisions.
 - 4 Minimum sheet size: 24 x 36 inches.
- B. Format of listings: The chronological order of the start of each item of work for each structure.

C. Identification of listings: By major specification section numbers as applicable and structure.

1.04 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

- 1 Show the complete sequence of construction by activity.
- 2 Show the dates for the beginning of, and completion of, each major element of construction in no more than a two-week increment scale.
- 3 Show projected percentage of completion for each item, as of the first day of each month.
- 4 Show projected dollar cash flow requirements for each month of construction.

B. Submittals Schedule for Shop Drawings, and Samples in accordance with Section 01300. Show:

- 1 The dates for CONTRACTOR's submittals.
- 2 The dates submittals will be required for OWNER-furnished products, if applicable.
- 3 The dates approved submittals will be required from the ENGINEER.

C. A typewritten list of all long lead items (equipment, materials, etc.)

1.05 PROGRESS REVISIONS

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:

- 1 Major changes in scope.
- 2 Activities modified since previous submission.
- 3 Revised projections of progress and completion.
- 4 Other identifiable changes.

C. Provide a narrative report as needed to define:

- 1 Problem areas, anticipated delays, and the impact on the schedule.
- 2 Corrective action recommended, and its effect.
- 3 The effect of changes on schedules of other prime CONTRACTORS.

1.06 SUBMISSIONS

A. Submit initial schedules to the ENGINEER within 10 days after the effective date of the Agreement.

- 1 The ENGINEER will review schedules and return review copy within 21 days after receipt.
- 2 If required, resubmit within 7 days after return of review copy.

- B. Submit revised monthly progress schedules with that month's application for payment.
- C. Submit five (5) opaque reproductions.

1.07 DISTRIBUTION

- A. Distribute copies of the reviewed schedules to:
 - 1 ENGINEER.
 - 2 Job site file.
 - 3 Subcontractors.
 - 4 Other concerned parties.
 - 5 OWNER (two copies).
- B. Instruct recipients to report promptly to the CONTRACTOR, in writing, any problems anticipated by the projections shown in the schedules.

PART 2 -PRODUCTS -Not used.

PART 3 -EXECUTION

3.01 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

- A. The CONTRACTOR agrees that whenever it becomes apparent from the current monthly schedule that delays to the critical path have resulted, and hence, that the contract completion date will not be met or when so directed by the ENGINEER, he will take some or all of the following actions at no additional cost to the OWNER, submitting to the ENGINEER for approval, a written statement of the steps he intends to take to remove or arrest the delay to the critical path in the approved schedule.
 - 1 Increased construction manpower in such quantities and crafts as will substantially eliminate, in the judgment of the ENGINEER, the backlog of work.
 - 2 Increase the number of working hours per shift, shifts per working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate, in the judgment of the ENGINEER, the backlog of work.
 - 3 Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.
 - 4 Costs incurred by the OWNER arising from such lengthening of hours, including furnishing of Inspectors, shall be the CONTRACTOR's responsibility and shall be deducted from monies due him. Failure of the CONTRACTOR to comply with the requirements of the ENGINEER may be grounds for determination by the OWNER that the CONTRACTOR is not proceeding at such rates as will ensure completion within the specified time and may result in the termination of the right of the CONTRACTOR to continue the work.

3.02 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME

- A. If the CONTRACTOR desires to make changes in his method of operating which affect the approved schedule, he shall notify the ENGINEER in writing stating what changes are proposed and the reason for the change. If the ENGINEER approves these changes, the CONTRACTOR shall revise and submit for approval, without additional cost to the OWNER, all of the affected portion of the schedule. The schedule shall be adjusted by the CONTRACTOR only after prior approval of his proposed changes by the ENGINEER.
- B. Adjustments may consist of changing portions of the activity sequence and/or activity durations, division of approved activities, or other adjustments as may be approved by the ENGINEER. The addition of extraneous, non-working activities and/or activities which add unapproved restraints to the schedule shall not be approved.
- C. If the completion of any activity, whether or not critical, falls more than 100 percent behind its approved duration, the CONTRACTOR shall submit for approval a schedule adjustment showing each such activity divided into two activities reflecting completed versus uncompleted work.
- D. Shop drawings which are not approved on the first submittal or within the scheduled time shall be immediately rescheduled, as well as pipelines and tanks which do not pass leak tests.
- E. The contract completion time will be adjusted only for causes specified in this contract. In the event the CONTRACTOR requests an extension of any contract completion date, he shall furnish such justification and supporting evidence as the ENGINEER may deem necessary for a determination as to whether the CONTRACTOR is entitled to an extension of time under the provisions of this contract. ENGINEER will, after receipt of such justification and supporting evidence make findings of fact and will advise the CONTRACTOR in writing thereof. If the ENGINEER finds that the CONTRACTOR is entitled to any extension of any contract completion date under the provisions of this contract, the ENGINEER's determination as to the total number of days extension shall be based upon the currently approved schedule and on all data relevant to the extension. Such data shall be included in the next monthly updating of the schedule. The CONTRACTOR acknowledges and agrees that actual delays in activities which, according to the schedule, do not affect any contract completion date shown by the critical path in the schedule do not have any effect on the contract completion date or dates, and therefore, will not be the basis for a change therein.
- F. From time to time it may be necessary for the contract schedule and/or completion time to be adjusted by the ENGINEER to reflect the effects of job conditions, weather, technical difficulties, strikes, unavoidable delays on the part of the OWNER or his representatives, and other unforeseeable conditions which may indicate schedule adjustments and/or completion time extension. Under such conditions, the CONTRACTOR shall reschedule the work and/or contract completion time to reflect the changed conditions, and the CONTRACTOR shall revise his schedule accordingly. No additional compensation shall be made to the CONTRACTOR for such schedule changes except for unavoidable overall contract time extensions beyond the actual completion of all unaffected work in the contract, in which case the CONTRACTOR shall take all possible action to minimize any time extension and any additional cost to the OWNER. It is specifically pointed out that the use of available float time in the schedule may be used by the OWNER as defined by the ENGINEER, as well as by the CONTRACTOR. Float time is defined as the amount of time between the early start date, and the late start date, or the early finish date and the late finish date, of any of the activities in the schedule.

G. The OWNER controls the float time in the approved schedule and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the schedule, the OWNER may initiate changes to the contract work that absorb float time only. OWNER-initiated changes that affect the critical path on the approved schedule shall be the sole grounds for extending (or contracting) said completion dates. CONTRACTOR initiated changes that encroach on the float time identified in the approved schedule may be accomplished with the OWNER's concurrence. Such changes, however, shall give way to OWNER-initiated changes competing for the same float time.

3.03 COORDINATING SCHEDULES WITH OTHER CONTRACT SCHEDULES

A. Where work is to be performed under this contract concurrently with and/or contingent upon work performed on the same facilities or area under other contracts, the CONTRACTOR's schedule shall be coordinated with the schedules of the other contracts. The CONTRACTOR shall obtain the schedules of the other appropriate contracts from the ENGINEER for the preparation and updating of his schedule and shall make the required changes in his schedule when indicated by changes in corresponding schedules.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit Shop Drawings, Product Data and Samples required by Contract Documents.

1.02 RELATED REQUIREMENTS

- A. Definitions and Additional Responsibilities of Parties: Conditions of the Contract.
- B. Section 01700: Project Closeout.

1.03 SHOP DRAWINGS

- A. Drawings shall be presented in a clear and thorough manner.
 - 1. Details shall be identified by reference of sheet and detail or schedule.
- B. Minimum sheet size: 8½ X 11 inches.

1.04 PRODUCT DATA

- A. Preparation
 - 1 Clearly mark each copy to identify pertinent products or models.
 - 2 Show performance characteristics and capacities.
 - 3 Show dimensions and clearances required.
 - 4 Show wiring or piping diagrams and controls.
- B. Manufacturer's standard schematic drawings and diagrams:
 - 1 Modify drawings and diagrams by deleting information which is not applicable to the work.
 - 2 Supplement standard information to provide information specifically applicable to the work.

1.05 CONTRACTOR RESPONSIBILITIES

- A. Review Shop Drawings, Product Data and Samples prior to submission.

- B. Determine and verify:
 - 1 Field measurements.
 - 2 Field construction criteria.
 - 3 Catalog numbers and similar data.
 - 4 Conformance with specifications.
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the contract Documents.
- E. Begin no fabrication or work that requires approved submittals until return of submittals by Engineer

1.06 SUBMISSION REQUIREMENTS

- A. Make submittals in such sequence as to cause no delay in the work.
- B. Number of submittals required:
 - 1 Shop Drawings and Product Data: Submit **eight (8)** copies.
 - 2 Samples: Submit the quantity stated in each specification section.
- C. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The Project title and number.
 - 3. Contract identification.
 - 4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 - 5. Identification of the product, with the specification section number.
 - 6. Field dimensions, clearly identified as such.
 - 7. Relation to adjacent or critical features of the work or materials.
 - 8. Applicable standards, such as ASTM or Federal specification numbers.
 - 9. Identifications of deviations from Contract Documents.
 - 10. Identification of revisions on resubmittals.
 - 11. An 8-inch X 3.5-inch blank space for Contractor and Engineer stamps.
 - 12. CONTRACTOR'S stamp initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

1.07 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals noted by the Engineer and resubmit unless otherwise noted.
- B. Shop Drawings and Product Data:
 - 1 Revise initial drawings or data, and resubmit as specified for the initial submittal.
 - 2 Indicate any changes which have been made other than those suggested by the Engineer.
- C. Samples: Submit new samples as required for initial submittal.

1.08 ENGINEER'S DUTIES

- A. Distribute reviewed copies of submittals to City.
- B. Review submittals within 30 days or in accord with schedule.
- C. Affix stamp and initials or signature, and indicate status of submittal.
- D. Return submittals to Contractor for distribution, or resubmission.
- E. Review initial submittals and one resubmittal. Resubmittals that cannot be approved will be returned. Additional resubmittals will be reviewed by the Engineer, and costs for time and materials for reviewing resubmittals will be back charged by the Engineer to the Contractor.

PART 2 -**PRODUCTS** – Not used.

PART 3 -**EXECUTION** -Not used.

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit to the Engineer a Schedule of Values allocated to the various portions of the Work, within ten days after award of contract.
 - B. Upon the request of the Engineer, support the values with data which will substantiate their correctness.
 - C. The Schedule of Values, unless objected to by the Engineer, shall be used only as the basis for the Contractor's Applications for Payment.
 - D. Related Requirements in Other Parts of the Contract Documents.
- 1 Agreement
 - 2 General Conditions
 - 3 Supplemental General Conditions

1.02 RELATED REQUIREMENTS

- A. Section 01025: Measurement and Payment
- B. Section 01152: Application for Payment
- C. Section 01600: Material, Equipment and Products.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. Type schedule on 8-1/2-inch X 11-inch white paper; Contractor's standard forms and automated printout will be considered for approval by Engineer upon Contractors request. Identify schedule with:
 - 1 Title of Project, location and (City, County, Owner) Project Number and Purchase Order Number.
 - 2 Engineer and Engineer's Project number.
 - 3 Name and Address of Contractor.
 - 4 Date of Submission.
- B. Schedule shall list the installed value of the component parts of the Work, in sufficient detail to serve as a basis for computing values for progress payments during construction.
- C. Follow the table of contents of these Specifications as the format for listing component items.
 - 1. Identify each line item with the number and title of the respective major section of the specifications.
- D. For each major line item list sub-values of:

- 1 Major products or operations under the item.
- 2 Contract conditions, such as: bonds, insurance premiums, job mobilization, construction facilities and temporary controls.

E. For the various portions of the Work:

1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. The cost of the materials, delivered and unloaded, with taxes paid.
 - b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. Submit a subschedule of unit costs and quantities for:

- 1 Products specified under a unit cost allowance in Section 01018.
- 2 Products on which progress payments will be requested for stored products.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

- 1 Cost of the material, delivered and unloaded at the site, with taxes paid.
- 2 Installation costs, including Contractor's
- 3 Overhead and profit.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 -PRODUCTS – Not Used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Employ competent photographer to take construction record photographs periodically during course of the Work.

1.02 RELATED REQUIREMENTS

- A. Section 01010: Summary of Work
- B. Section 01025: Measurement and Payment
- C. Section 01152: Application for Payment
- D. Section 01700: Project Closeout.

1.03 PHOTOGRAPHY REQUIRED

- A. Provide a pre-construction video tape showing the project area (both sides of the street, complete length of the project).
- B. Provide photographs taken on cutoff date for each scheduled Application for Payment.
- C. Views and Quantities Required:
 - 1 At each specified time, photograph Project from six to ten different views, as approved by Engineer.
 - 2 Provide 8 x 10 inch prints of each view. Two (2) copies of each print shall be provided.
 - 3 Provide two copies of a VHS video tape or DVD recording.

1.04 COSTS OF PHOTOGRAPHY

- A. Pay costs for specified photography and prints.
- B. Parties requiring additional photography or prints will pay photographer directly.

PART 2 -PRODUCTS

2.01 PRINTS

- A. Color:
 - 1 Paper; Single weight, neutral black image tone, white base.
 - 2 Finish: Smooth surface, glossy.

- B. Identify each print on back, listing:
- 1 Name of Project.
 - 2 Orientation of view.
 - 3 Date and time of exposure.
 - 4 Name and address of photographer.
 - 5 Photographer's numbered identification of exposure.

PART 3 -EXECUTION

3.01 COLOR AUDIO VIDEO TAPING OF CONSTRUCTION AREA

- A. Prior to beginning any construction, the Contractor shall prepare a color audio videotape of all the areas to be affected by construction (HIGH Density, VHS or DVD format).
- B. The audio video taping shall be done within the one-week period prior to placement of materials or equipment on the construction area and furnished one week prior to the start of construction. The audio video taping shall be done with a City Representative present.
- C. To preclude the possibility of tampering or editing in any manner, all video recordings shall, by electronic means, generate and display continuously and simultaneously on the screen digital information to include the date and time of recording. The time information shall consist of hours, minutes and seconds, separated by colons (i.e., 10:35:18).
- D. The audio video tape shall consist of one video and one audio track which shall be 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 the narrative commentary.
- E. The rate of speed in the general direction of travel of the conveyance used during taping shall be controlled to provide a usable image. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that playback will produce clarity of the object viewed.
- F. All taping shall be done during times of good visibility. No taping shall be done during period of visible precipitation, unless otherwise authorized by the City.
- G. The City shall have the authority to designate what areas may be omitted or added for audio video coverage.
- H. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than eight feet to insure perspective.
- I. In some instances, audio videotape coverage will be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance by the City.
- J. Areas covered shall include offsite roadways that will be subjected to heavy usage such as for haul routes or delivery of heavy components or equipment.

3.02 TECHNIQUE

- A. Factual presentation
- B. Correct exposure and focus.
- 1 High resolution and sharpness.
- 2 Maximum depth-of-field.
- 3 Minimum distortion.

3.03 VIEWS REQUIRED

- A. Photograph from locations to adequately illustrate condition of construction and state of progress.
- 1 At successive periods of photography, take at least one photograph from the same overall view as previously.
- 2 Consult with engineer at each period of photography for instructions concerning views required.

3.04 DELIVERY OF PRINTS

- A. Deliver prints to Engineer with monthly Pay Application.

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 -GENERAL

1.01 SELECTION AND PAYMENT:

- A. Contractor shall employ and pay for services of an independent testing laboratory to perform all specified inspection and testing. City to approve the testing laboratory.
- B. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.02 CONTRACTOR SUBMITTALS:

- A. Prior to start of work, submit testing laboratory name, address, telephone number, and responsible officer to the Engineer.

1.03 LABORATORY RESPONSIBILITIES:

- A. Samples to be taken by laboratory.
- B. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
- C. Perform specified inspection, sampling, and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of work or products.

1.04 LABORATORY REPORTS:

- A. After each inspection and test, promptly submit two certified copies of laboratory report to both the Engineer and the Contractor.
- B. Include:
 - 1. Date issued,
 - 2. Project title and number,
 - 3. Name of inspector,
 - 4. Date and time of sampling or inspection,
 - 5. Identification of product and Specifications Section,
 - 6. Location in the Project,
 - 7. Type of inspection or test,
 - 8. Date of test,
 - 9. Results of tests,
 - 10. Conformance with Contract Documents.

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

1.05 LIMITS ON TESTING LABORATORY AUTHORITY:

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

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

C. Laboratory may not assume any duties of Contractor.

D. Laboratory has no authority to stop the Work.

1.06 CONTRACTOR RESPONSIBILITIES:

A. Cooperate with laboratory personnel, and provide access to the work and to manufacturer's facilities.

B. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage, and curing of test samples.

C. Notify laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

D. Pay costs of testing laboratory services.

1.07 SCHEDULE OF INSPECTIONS AND TESTS:

A. See individual sections of the specifications for required inspection and testing.

B. Testing locations to be approved by the Engineer or Engineer's representative.

PART 2 -PRODUCTS – Not Used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01450

ENVIRONMENTAL PROTECTION

PART 1 -GENERAL

1.01 SECTION INCLUDES:

- A. Requirements for prevention of environmental pollution and damage as the result of construction operations under this contract.

1.02 SYSTEM DESCRIPTION:

- A. Environmental pollution and damage are defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural, and/or historical purposes.
- B. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual esthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

1.03 QUALITY ASSURANCE:

- A. Establish and maintain quality control for environmental protection of all items set forth herein.
- B. Record on daily quality control reports or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective actions taken.
- C. Comply with all requirements under the terms and conditions set out in all permit(s) obtained by the Owner.
- D. The Owner's Representative will notify the Contractor in writing of any observed noncompliance with the Federal, State, or local laws or regulations, permits and other elements of the Environmental Protection Plan.
 - 1 After receipt of such notice, inform the Owner's Representative of proposed corrective action and take such action as may be approved.
 - 2 Failure to comply promptly will be grounds for suspension of the work.
 - 3 No time extensions shall be granted or costs or damages allowed for any such suspension.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION

3.01 PROTECTION OF ENVIRONMENTAL RESOURCES:

- A. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract. Confine activities to areas defined by the drawings and specifications.

- B. Disposal of Waste:
 - 1 Dispose of solid wastes (excluding clearing debris), in containers, which are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination.
 - 2 Transport all solid waste off property and dispose of it in compliance with Federal, State and local requirements for solid waste disposal.
 - 3 Store chemical waste in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, State and local regulations.
 - 4 Discarded materials other than those, which can be included in the solid waste category, shall be handled as directed by the Owner's Representative.

- C. Under no circumstances shall the Contractor discharge any sewage into the storm system or on the ground. The Contractor shall prepare a contingency plan to dispose of the sewage should the by-pass pumping system fail. Previous methods included the use of tankers to transport the sewage to a different part of the system. The Contractor should also consider re-flooding the wet well. However, no additional payment will be made for clean up and restoration of work already completed.

3.02 PROTECTION OF WATER RESOURCES:

- A. Keep construction activities under surveillance, management and control to avoid pollution of surface and ground waters. Contractor to acquire all permits and pay for all associated permit fees necessary for disposal of discharge water into waterways that require turbidity screens.

- B. Monitor all water areas affected by construction activities.

- C. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment. If required, the Contractor shall be responsible for obtaining all applicable South Florida Water Management District dewatering permits and pay for all associated permit fees.

- D. Protect site from puddling or running water.

3.03 PROTECTION OF FISH AND WILDLIFE RESOURCES:

- A. Keep construction activities under surveillance, management and control, to minimize interference with, disturbance to, and damage of fish and wildlife.

END OF SECTION

SECTION 01490

HANDLING AND DISPOSAL OF ASBESTOS CEMENT (TRANSITE) PIPE

~~PART 1 - GENERAL~~

~~1.01 GENERAL:~~

- ~~A. Cutting and disposal of asbestos cement pipe (transite) quantities greater than twelve (12) linear feet cumulative per project must be performed by a Florida-licensed Asbestos Abatement Contractor.~~

~~1.02 SUMMARY:~~

- ~~A. This section specifies administrative and procedural requirements governing the handling and disposal of transite pipe.~~

~~1.03 SHOP DRAWINGS SUBMITTALS:~~

- ~~A. Within ten (10) working days of award of this contract and prior to the pre-construction conference, the successful contractor or his designated subcontractor will:~~

- ~~1. Prepare an inventory of the length, size and weight of transite pipe to be removed during the project, and~~
- ~~2. Submit a clear, legible copy of this inventory, along with the name of the Asbestos Abatement Contractor and a copy of his Florida Asbestos Contractor License, to the City of Lake Worth's Water Utilities Department.~~

- ~~B. At least ten (10) working days before actual removal, the Contractor or his designated subcontractor will complete a National Emission Standards for Hazardous Air Pollutants (NESHAP) "Notice of Demolition and/or Removal" form if the project inventory exceeds 260 linear feet of transite pipe cumulative for the project. Refer to 40 CFR Part 61 for examples of NESHAP form or contact Palm Beach County Public Health Unit.~~

- ~~C. The contractor or his asbestos subcontractor will deliver these completed forms by hand or certified mail to the following agencies (facsimiles are not permitted):~~

~~DEPARTMENT OF ENVIRONMENTAL PROTECTION Division of Air Resource Management 2600 Blair Stone Road Tallahassee, FL 32399-2400~~

~~PALM BEACH COUNTY PUBLIC HEALTH DEPARTMENT Division of Public Health Air and Waste Program Attn: Mr. Alex Ortega 800 Clematis Street P.O. Box 29 West Palm Beach, FL 33401-0029~~

~~CITY OF LAKE WORTH Water Utilities Department 1900 2nd Avenue North, Lake Worth, FL 33460~~

~~D. If the project inventory does not exceed 260 linear feet of transite pipe cumulative for the project, the Contractor or his designated subcontractor will complete a National Emission Standards for Hazardous Air Pollutants (NESHAP) "Notice of Demolition and/or Removal" form, indicates "COURTESY NOTIFICATION" on said form, and follow the same aforementioned execution.~~

~~E. Upon receipt of the NESHAP form and asbestos abatement Contractor's license, the City of Lake Worth Utilities will forward a copy of each to C.L.W. Risk Management within 5 business days.~~

~~**PART 2 - PRODUCTS** — Not Used.~~

~~**PART 3 - EXECUTION**~~

~~3.01 EXECUTION OF WORK:~~

~~A. Transite pipe will be kept wet during all phases of removal. No visible emissions are permitted.~~

~~B. Apply drop cloth of 6-mil poly to the area beneath and a minimum of 3 feet beyond the section of pipe to be cut.~~

~~C. Wet pipe using an airless sprayer or utilize available water. Break, cut, or snap pipe into sections suitable in size to the disposal facility.~~

~~D. Apply lockdown encapsulant to exposed edges of pipe. Pick up all pipe debris which may have fallen outside dropcloth.~~

~~E. Use of compressed air to clean transite pipes is prohibited. At no time should transite pipe or pieces be mixed in with fill.~~

~~3.02 DISPOSAL:~~

~~A. Wrap pipe in existing dropcloth. Transfer pipe to a clean dropcloth outside the trench, and wrap and secure in second layer of 6-mil poly.~~

~~B. Affix the following labels to the exterior of each separately wrapped section of pipe. Labels are to be waterproof, legible, and large enough in size to be readily visible.~~

~~1. First Label:~~

~~**CAUTION**~~

~~Contains Asbestos Fibers Avoid Opening or Breaking Container Breathing Asbestos is Hazardous to Your Health~~

~~2. Second Label:~~

~~**DANGER**~~

~~Contains Asbestos Fibers Avoid Breathing Dust~~

~~Cancer and Lung Disease Hazard Breathing Airborne Asbestos, Tremolite, Anthophyllite or Actinolite Fibers is Hazardous to Your Health~~

~~3. Third Label:-~~

~~**HAZARDOUS SUBSTANCE**~~

~~Solid, NOS ORM-E, NA9188 (Asbestos)~~

~~4. Fourth Label:-~~

~~a. Label each container with the name of the generator (owner) and the location at which the waste was generated.~~

~~C. Properly dispose of all transite pipe generated each day. All wrapped sections may be stored in a secure, locked enclosure pending disposal, if authorized by owner. At no time are sections or pieces of transite pipe to be left on the worksite unwrapped and unsecured at the end of the workday.~~

~~D. All vehicles and/or containers used to haul asbestos-containing waste material shall be lined with a minimum of 6-mil poly layer.~~

~~E. Label trucks used to transport asbestos-containing waste material during loading and unloading as follows (refer to 29 CFR 1910.145 (d)(4) for sign format)~~

~~**DANGER**~~

~~Asbestos Dust Hazard Cancer and Lung Disease Hazard Authorized Personnel Only~~

~~F. Transite debris bagged and not disposed of in a licensed landfill is a violation of asbestos NESHAP regulations.~~

~~3.03 ABANDONMENT:-~~

~~A. Transite pipe to be abandoned in place shall be filled with grout. Abandoned transite pipe is to be shown on the as-builts drawings. The grout mix shall be:-~~

~~Pounds Cubic Foot Cement 340 1.73 Sand 2840 17.91
Stone 0 0 Water 374 6.00 Admix/Type B 13 oz. Air 95.0% +/- 170 1.35~~

~~B. The slump shall be 6" +/- 1 inch, Admix shall meet ASTM C-494 type B.D.. Alternative mixes will be considered.~~

~~3.04 POST WORK SUBMITTALS:-~~

~~A. Waste generator (or authorized agent) will fill out a Waste Shipment Record (WSR) for each shipment of asbestos-containing waste material. Refer to 40 CFR Part 61 for example of WSR or contact Palm Beach County Public Health Department.~~

~~B. The contractor or his asbestos subcontractor will submit the following documents to the City of Lake Worth Utilities Department prior to payment:-~~

~~1 A copy of the WSR prior to shipment.~~

~~2 A copy of the WSR signed by the approved disposal facility within thirty-five (35) days of shipment.~~

~~3.05 REGULATIONS:~~

~~A. General: All applicable Federal, State and local regulations.~~

~~B. Environmental Protection Agency 40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision Final Rule November 20, 1990.~~

~~C. Occupational Safety and Health Administration 29 CFR 1910.1001 General Industry Standard.~~

~~D. Department of Professional Regulation, Florida Statutes Chapter 455, Licensure of Consultants and Contractors.~~

~~3.06 INDEMNITY:~~

~~A. Indemnity shall be in accordance to Section 13 of the General Conditions to Contract.~~

~~3.07 PAYMENT:~~

~~A. Asbestos cement (transite) pipe abatement shall be paid for by the linear foot, at the price bid in the proposal for that item, which price shall include all the materials, labor, tools, equipment and service employed, including all associated fees and testings (if required), in completing the abatement of asbestos cement (transite) piping, as shown on plans and herein specified and described.~~

END OF SECTION

SECTION 01500

CONSTRUCTION CONSIDERATIONS

PART 1 -GENERAL

1.01 HYDRAULIC UPLIFT ON STRUCTURES:

- A. The Contractor shall be completely responsible for any pipelines, sanitary manholes, or similar structures that may become buoyant during the construction operations due to the ground water or floods and before the structure is put into operation. Should there be any possibility of buoyance of a structure, the Contractor shall take the necessary steps to prevent its buoyance. Damage to any structures due to floating or flooding shall be repaired or the structures replaced at the Contractor's expense.

1.02 RELOCATIONS:

- A. The Contractor shall be responsible for the relocation of structures, including but not limited to, light poles, sign poles, fences, piping, conduits and drains that interfere with the positioning of the Work as set out on the Drawings. Unless a pay item is specifically called for in the Schedule of Values, the cost of all such relocations shall be included in the bid and shall not result in any additional cost to the Owner.

1.03 SUBSURFACE INVESTIGATIONS:

- A. The Contractor shall be responsible for having determined to his satisfaction, prior to his bid submittal, the nature and location of the work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the groundwater condition, the character of equipment and facilities required preliminary to and during the performance of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. The prices established for the work to be done shall reflect all costs pertaining to the work. Any claims for extras based on the substrata or groundwater table conditions will be disallowed.

1.04 OBSTRUCTIONS:

- A. All water pipes, storm drains, sanitary sewers, force mains, or other pipe, telephone or power cables or conduits and all other obstructions, whether or not shown, shall be protected and temporarily supported across utility line excavations. The Contractor shall be responsible for any damage to any such pipes, conduits, or structures. Approximate locations of known water, sanitary, raw water, drainage, power and telephone installations along route of new force main pipeline or in the vicinity of new work are shown, but must be verified in the field by the Contractor before beginning any excavation. The Contractor shall uncover these pipes, ducts, cables, etc., carefully, by hand if necessary, prior to installing new pipeline or structures. Any discrepancies or differences found shall be brought to the attention of the Engineer in order that necessary changes may be made to permit installation of new work. These conditions are supplemental to general requirements elsewhere in the Contract Documents.

1.05 SITE CONDITIONS:

A. The Contractor acknowledges that he has investigated prior to submitting his bid and satisfied himself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, canal stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor further acknowledges that he has satisfied himself as to the character, quality of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior his bid submittal. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

1.06 PROTECTION OF PROPERTY:

A. The Contractor shall protect all property that may be affected by his work or operations. The location and extent of underground and covered facilities are not guaranteed and the Contractor is cautioned to proceed with care in order to prevent the undermining or damage to existing structures, piping, or facilities.

B. When City water is being used, the supply source shall be protected against contamination in accordance with existing codes and regulations.

C. In the event any of the Contractor's activities were to disrupt or endanger any facilities, he shall at his own expense make all necessary repairs or replacements necessary to correct the situation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hour per day, seven workday basis. The Contractor shall be responsible for the services of repair crews on call 24 hours per day for emergencies that arise involving work under this Contract.

1.07 WORK ADJACENT TO LAKE WORTH UTILITIES (LWU) FACILITIES:

A. The attention of the Contractor is drawn to existing Lake Worth Utilities overhead and underground facilities are located in the construction area. The Contractor shall protect all existing power transmission and distribution facilities throughout the period of construction and shall contact the offices of the City at least 72 hours prior to the start of any construction.

B. It is full and complete responsibility of the Contractor to determine the exact location of all overhead and underground power transmission and distribution facilities in the area of the Works whether or not they are indicated on the Drawings.

1.08 WORK ADJACENT TO AT&T TELECOMMUNICATIONS FACILITIES:

A. The attention of the Contractor is drawn to the existing overhead and underground telecommunications facilities are located in the construction area. The Contractor shall protect all existing telecommunications facilities throughout the construction of the project and shall contact the appropriate telecommunications offices at least 72 hours prior to the start of construction.

- B. It is full and complete responsibility of the Contractor to determine the exact location of all overhead and underground telecommunications facilities in the area of the Works whether or not they are indicated on the Drawings.

1.09 WORK ADJACENT TO FLORIDA PUBLIC UTILITIES COMPANY (FPU) FACILITIES:

- A. The attention of the Contractor is drawn to the existing underground natural gas lines are located in the construction area. The Contractor shall protect all existing natural gas pipelines throughout the construction of the project and shall contact the appropriate natural gas offices at least 72 hours prior to the start of construction.
- B. It is full and complete responsibility of the Contractor to determine the exact location of all underground natural gas lines in the area of the Works whether or not they are indicated on the Drawings.

1.10 WORK ADJACENT TO CABLE TV (CATV) FACILITIES:

- A. The attention of the Contractor is drawn to the existing overhead and buried CATV lines are located in the construction area. The Contractor shall protect all existing overhead and buried CATV throughout the construction of the project and shall contact the appropriate cable TV offices at least 72 hours prior to the start of construction.
- B. It is full and complete responsibility of the Contractor to determine the exact location of all overhead and underground CATV in the area of the Works whether or not they are indicated on the Drawings.

1.11 WORK ADJACENT TO PALM BEACH COUNTY TRAFFIC OPERATIONS FACILITIES:

- A. The attention of the Contractor is drawn to the existing buried Palm Beach County Traffic Operations lines are located in the construction area. The Contractor shall protect all existing buried traffic cables throughout the construction of the project and shall contact the Palm Beach County Traffic Department at least 72 hours prior to the start of construction.
- B. It is full and complete responsibility of the Contractor to determine the exact location of all underground traffic cables in the area of the Works whether or not they are indicated on the Drawings.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01501

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 -GENERAL

1.01 SECTION INCLUDES:

- A. Temporary Utilities: Electricity, lighting, telephone service and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work and water control.
- C. Construction Facilities: Access roads, parking, progress cleaning, project signage and temporary buildings.

1.02 RELATED SECTIONS:

- A. Section 01570 –Maintenance of Traffic.

1.03 TEMPORARY ELECTRICITY:

- A. Cost: By Contractor; provide and pay for any required temporary power service.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES:

- A. Provide and maintain lighting for construction operations as necessary.

1.05 TEMPORARY VENTILATION:

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity and to prevent accumulation of dust, fumes, vapors or gases.

1.06 TELEPHONE SERVICE:

- A. Provide, maintain and pay for telephone service to field office, if required, at time of project mobilization.

1.07 TEMPORARY SANITARY FACILITIES:

- A. Provide and maintain required temporary restroom facilities and enclosures for field crews.

1.08 BARRIERS:

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations maintaining access to public rights-of-way and existing buildings and driveways. Maintain access to fire hydrants.

B. Provide protection for vegetation designated to remain. Replace damaged plant life.

C. Protect vehicular traffic, stored materials, site and structures from damage.

1.09 FENCING:

A. Construction: At Contractor's option, construct temporary commercial grade chain link fence 6 foot high. Contractor is responsible for cost of any construction fencing.

1.10 WATER CONTROL:

A. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment. Contractor responsible for obtaining any required South Florida Water Management District dewatering permits.

B. Protect site from puddling or running water.

1.11 TEMPORARY BYPASSING FACILITIES:

A. Contractor to provide all pumps, labor and materials required to bypass the flow of sewage during sanitary sewer main replacement and manhole work.

B. Contractor to provide all pumps, labor and materials required to bypass the flow of storm water during drainage system replacement and installation work.

1.12 PROTECTION OF INSTALLED WORK:

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

1.13 SECURITY:

A. Provide security and facilities to protect Work, existing facilities and Owner's operations from unauthorized entry, vandalism or theft.

1.14 PROGRESS CLEANING AND WASTE REMOVAL:

A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.

B. Collect and remove waste materials, debris and rubbish from site daily and dispose off-site.

1.15 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS:

A. Remove temporary utilities, equipment, facilities and materials prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing (and permanent) facilities used during construction to original condition.

1.16 TEMPORARY WATER SERVICES:

A. Responsibility shall be upon the contractor to provide and maintain, at his own expense, an adequate supply of water for his use for construction and domestic consumption, and to install and maintain necessary supply connections and piping for same, but only at such locations and in such manner as may be approved by the Owner. Before final acceptance, temporary connections and piping installed by the Contractor shall be removed in a manner satisfactory to the Owner.

The Contractor shall request through the City of Lake Worth Utilities, Customer Service facility a 3" hydrant meter, which shall be installed with a backflow preventer attached.

The method of request is to have an authorized agent come to the Utilities Customer Service office with the proper adjustable hydrant wrench, make out a hydrant meter permit, have said permit hand-delivered to Utilities Customer Service, located on the first floor of City Annex Building, 414 Lake Ave, Lake Worth, FL 33460 with a \$500.00 deposit and a mailing address. This must be done at least two days prior to the need to use the hydrant meter. This 3" hydrant meter will be billed monthly at a minimum rate of \$65.00 plus water usage at the current rates schedule. These costs are subject to change by City Commission Resolution.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01540

SECURITY AND PROTECTION

PART 1 -GENERAL

1.01 DESCRIPTION:

A. Requirements: This section specified minimum requirements of temporary provisions for security and protection is the Contractor's sole responsibility, and is not limited to the minimums established by the requirements hereof. Except as otherwise indicated, the use of alternative security and protection methods of facilities, equivalent to those specified, is the Contractor's option. The work of this section is defined to exclude required insurance coverage, performance/payment bonds, first aid requirements, general supervision, quality control, damage surveys, enclosure of completed work and stored materials, inspections and test of the work, instruction to Owner's personnel and similar recognized protection/security provision, which are, nevertheless, specified in other parts of the contract documents, if required.

B. The types of security and protection facilities and services required for the entire project include, but are not limited to, the following:

- 1 Barricades, warning signs, lights.
- 2 Security enclosure and lockup of work.
- 3 Personnel security program.
- 4 Environmental protection.

1.02 QUALITY ASSURANCE:

A. Regulations: Comply with governing regulations for the installation and operation of security and protection facilities, including the rules and recommendations of fire and building departments, police, rescue squad's watchman services and similar local organizations and companies.

1.03 JOB CONDITIONS:

- A. Scheduled Uses: Provide security and protection at the times first needed at the site; and maintain, expand and modify the facilities as needed throughout the construction period.
- B. Conditions of Use: Use security and protection facilities and services in a safe, sanitary, lawful and publicly acceptable manner, which will not interfere unduly with performance of the work nor result in other deleterious effects.

1.04 MATERIALS OF SECURITY AND PROTECTION FACILITIES:

A. General: For use in security and protection facilities, provide either new or used materials and equipment, which are in substantially undamaged and serviceable conditions. Provide types and quality levels which are recognized in the construction industry as suitable for the intended use in each application.

1.05 INSTALLATION OF SECURITY/PROTECTION FACILITIES:

- A. General: Use qualified tradesmen for the installation of security and protection facilities. Locate facilities where they will serve the total project construction work adequately, and result in a minimum interference with performance of the work. Relocate, modify and extend facilities as required during the course of the work, to properly accommodate the entire work of the project. Provide and maintain a reasonably neat and uniform appearance in security and protection facilities, acceptable to the Owner.

1.06 BARRICADES, WARNING SIGNS AND LIGHTS:

- A. General: Comply with recognized standards and code requirements for the erection of substantial and structurally adequate barricades wherever needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs and inform personnel at the site, and the general public where exposure exists of the hazard being projected. Provide lighting where appropriate and needed for the recognition of the facility, including flashing red lights where appropriate.
- B. Storage: Where materials and equipment must be temporarily stored, prior to and during construction, and are of substantial value or attractive for possible theft, provide secure lockup and enforce strict discipline in connection with the timing of installation and release of materials, so that the opportunity for theft and vandalism is minimized.

1.07 ENVIRONMENTAL PROTECTION:

- A. General: Provide protection facilities, operate temporary facilities, conduct construction activities and enforce strict discipline for personnel at the project site in ways and by methods which comply with environmental protection regulations, and which will minimize the possibility that the air, waterways and subsoil might be contaminated or polluted, or that other undesirable and deleterious effects might result from performance of the work at the project site. Avoid the use of tools and equipment which produce harmful noise; and restrict the use of noise-making tools and equipment to the hours of use which will minimize noise complaints by persons or residents near the project.

1.08 TERMINATION AND REMOVAL:

- A. General: Maintain protection and security facilities and services in good operating condition through the time and use and until the completion and use of permanent work makes each temporary service unnecessary, or until the Owner's occupancy has replaced the need for the service or until its discontinuation has been otherwise authorized. Remove each facility promptly after its use has been terminated. Complete or restore permanent work which may have been delayed or otherwise affected by the temporary facility. Replace work which cannot be satisfactorily restored. Except as otherwise indicated, the materials and equipment of temporary security and protection facilities remain the property of the Contractor.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01570

MAINTENANCE OF TRAFFIC

PART 1 -GENERAL

1.01 DESCRIPTION:

- A. Provide all labor, material and services to perform all operations required for the maintenance and protection of vehicular and pedestrian traffic in conformance to all applicable F.D.O.T. laws and regulation and subject to approval and permits by City, Palm Beach County (if applicable), and F.D.O.T. (if applicable).

1.02 SUBMITTAL:

- A. Submit Traffic Control Plans and Construction Schedule to the City, Palm Beach County (if applicable), and the F.D.O.T. (If applicable) for review and approval at least 30 days prior to the start of construction.

1.03 SIGNS AND DEVICES:

- A. Traffic Control and Informational Signs.
- B. Traffic Cones and Drums, and Lights.
- C. Flagman Equipment.

1.04 CONSTRUCTION PARKING CONTROL:

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles and Owner's operations.

1.05 FLAGPERSONS:

- A. Provide trained and equipped flagpersons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

1.06 LIGHTS:

- A. Use lights during hours of low visibility to delineate traffic lanes and to guide traffic.

1.07 TRAFFIC SIGNS AND DEVICES:

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed, to direct construction and affected public traffic. The contractor shall submit traffic control through work zone plans based on F.D.O.T. Roadway and Traffic Design Standards, 2013 Edition; Index No. 604 for work within intersections, and F.D.O.T. Index No. 603 and 605 for work requiring the closure of a traffic lane.

- B. At approaches to activities on or near sidewalks and elsewhere as needed, to notify affected non-motorized public traffic the closure of sidewalks, the contractor shall submit traffic control through work zone plans based on F.D.O.T. Roadway and Traffic Design Standards, 2013 Edition, Index No. 660.
- C. Relocate as Work progresses, to maintain effective traffic control.

1.08 REMOVAL:

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.

1.09 SPECIFICATIONS BY REFERENCE:

- A. State of Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 102, 2013 Edition.
- B. State of Florida Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations.
- C. The Manual of Uniform Traffic Control Devices, latest edition.

1.10 SPECIFIC TRAFFIC CONTROL:

- A. Contractor shall maintain through traffic on all public roads at all times unless stated otherwise herein.
- B. Contractor shall maintain access to all vehicular driveways (public or private) at all times. Contractor shall backfill and install temporary rock base as necessary in order to provide safe and functional access to all driveways.
- C. Contractor shall coordinate with the Police and Fire Departments for whom the Contractor will provide satisfactory access at all times.
- D. Contractor shall maintain, at the minimum, one travel lane, each direction, when performing work within the Palm Beach County Right-of-Way.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION

3.01 EXECUTION:

- A. The Contractor shall arrange his work to cause minimum disturbance to normal pedestrian and vehicular traffic; and shall be held responsible for providing and maintaining suitable means of access (including emergencies) to all public and private properties during all stages of the construction.

- B. If it becomes necessary to block off an entire street to vehicular traffic during construction (other than for an emergency situation), the Contractor must contact the City for approval prior to completely blocking off the street.

END OF SECTION

SECTION 01600

EQUIPMENT AND MATERIALS

PART 1 -GENERAL

- 1.01 SUMMARY: THIS SECTION INCLUDES GENERAL REQUIREMENTS FOR EQUIPMENT AND MATERIAL TRANSPORTATION AND HANDLING, DELIVERY, STORAGE, AND PROTECTION OF CONTRACTOR AND CITY -FURNISHED EQUIPMENT AND MATERIALS.
- A. RELATED WORK:
1. SUBSTITUTIONS: Section 38 General Conditions. The contractor shall comply with the contract documents and the City's Approved Materials List (AML).
 2. SUBMITTALS: Section 01300.
- 1.02 DEFINITIONS: DEFINITIONS USED IN THIS PARAGRAPH ARE NOT INTENDED TO NEGATE THE MEANING OF OTHER TERMS USED IN THE CONTRACT DOCUMENTS, INCLUDING SUCH TERMS AS "SYSTEMS," "STRUCTURE," "FINISHES," "ACCESSORIES," "FURNISHINGS," "SPECIAL CONSTRUCTION," AND SIMILAR TERMS. SUCH TERMS ARE SELF-EXPLANATORY AND HAVE RECOGNIZED MEANINGS IN THE CONSTRUCTION INDUSTRY.
- A. PRODUCTS: Items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the Project or taken from the previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and other terms of similar intent.
- B. EQUIPMENT: A product with operational or non-operational parts, regardless of whether motorized, manually operated, or fixed. Equipment may require service connections such as wiring or piping.
- C. MATERIALS: Products that must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form parts of Work.
- 1.03 QUALITY ASSURANCE:
- A. EQUIPMENT AND MATERIAL INCORPORATED INTO THE WORK: Provide products that comply with the requirements of the Contract Documents, undamaged, and unless otherwise indicated, unused at the time of installation. Provide products that are complete with all accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and for the intended use and effect.
- B. STANDARD PRODUCTS: Where they are available and comply with Specifications, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- C. CONTINUED AVAILABILITY: Where, because of the nature of its application, the City is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard products for which the manufacturer has published assurances that the products and its parts are likely to be available to the City at a later date.

1. Conform to applicable Specifications, codes, standards, and regulatory agencies.
2. Comply with size, make, type, and quality specified, or as specifically approved in writing by the Engineer.
3. Manufactured and Fabricated Products:
 - a. Design, fabricate, and assemble in accordance with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - c. Equipment and Materials shall be suitable for service conditions intended.
 - d. Equipment capacities, sizes, and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing.
 - e. Provide labels and nameplates where required by regulatory agencies or to state identification and essential operating data.
 - f. Two or more items of the same kind shall be identical, supplied by the same manufacturer.
4. Do not use equipment and material for any purpose other than that for which it is designed or is specified.

D. SOURCE LIMITATIONS To the fullest extent possible, provide products of the same kind from a single source.

E. IDENTIFICATION: Each item of equipment shall have permanently affixed to it a label or tag with its equipment number designated in this contract. Marker shall be stainless steel and shall be located so as to be easily visible.

1.04 TRANSPORTATION AND SHIPMENT:

A. SHIPMENT PREPARATION: Contractor shall require manufacturers and suppliers to prepare Equipment and Materials for shipment in a manner to facilitate unloading and handling, and to protect against damage or unnecessary exposure in transit and storage, for contractor supplied equipment. Provisions for protection shall include the following:

- 1 Crates or other suitable packaging materials.
- 2 Covers and other means to prevent corrosion, moisture damage, mechanical injury, and accumulation of dirt in motors, electrical equipment, and machinery.
- 3 Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel.
- 4 Grease packing or oil lubrication in all bearings and similar items.
- 5 Precast concrete components shall be transported, lifted and stored as specified by the precast supplier. Precast supplier shall provide written instructions to the Contractor as to the above. Contractor shall provide a copy to City.

B. MARKING: Each item of Equipment and Material shall be tagged or marked as identified in the delivery schedule or on Submittals. Complete packing lists and bills of material shall be included with each shipment. Each piece of every item need not be marked separately, provided that all pieces of each item are packed or bundled together and the packages or bundles are properly tagged or marked.

1.05 DELIVERY, STORAGE AND HANDLING:

A. DELIVERY:

1. Arrange deliveries of Equipment and Materials in accordance with construction schedules, in ample time to facilitate inspection prior to installation, and to avoid delay of the Work.
2. Deliver, store and handle Equipment and Materials in accordance with manufacturer's recommendations using means and methods that will prevent damage, deterioration, and loss, including theft.
3. Control delivery schedules to minimize long term storage at the site and to prevent overcrowding of construction spaces. In particular, coordinate delivery and installation to ensure minimum holding or storage times for items known or recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.
4. Avoid conflict with Work of City or other contractors.
5. Deliver Equipment and Materials to the site in manufacturer's sealed containers or other packaging system with identifying labels and instructions for handling, storing, unpacking, protecting, and installing.
6. Mark deliveries of component parts of equipment to identify the equipment, to permit easy accumulation of parts, and to facilitate inspection and measurement of quantity or counting of units.
7. Immediately on delivery, inspect shipment to assure:
 - a. Product complies with requirements of Contract Documents and reviewed Submittals.
 - b. Quantities are correct.
 - c. Containers and packages are intact, labels are legible.
 - d. Equipment and Materials are properly protected and undamaged.

B. STORAGE:

1. Store Equipment and Materials immediately on delivery, and protect until completion of the Work. Store in accordance with manufacturer's instructions with seals and labels intact and legible.
2. Store Equipment and Materials in a manner that will not endanger the supporting construction.
3. Store Equipment and Materials that are subject to damage by elements in weather tight enclosures.
4. Maintain temperature and humidity within ranges required by manufacturer.
5. Protect motors, electrical equipment, plumbing fixtures, and machinery of all kinds against corrosion, moisture deteriorations, mechanical injury, and accumulation of dirt or other foreign matter.
6. Protect exposed-machined surfaces and unpainted iron and steel as necessary with suitable rust-preventive compounds.
7. Protect bearings and similar items with grease packing or oil lubrication.
8. Handle and store steel plate, sheet metal, and similar items in a manner to prevent deformation.

9. Exterior Storage:
 - a. Provide substantial platforms, blocking, or skids to support fabricated products aboveground; and to prevent soiling or staining. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
 - b. Store loose granular materials on solid surface areas to prevent mixing with foreign matter.
 - c. Provide surface drainage to prevent flow or ponding of rainwater.
10. Equipment and Materials shall not show any pitting, rust, decay, or other deleterious effects of storage prior to final acceptance of Work.
11. 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.

C. HANDLING:

- 1 Provide equipment and personnel necessary, to unload and handle Equipment and Materials, by methods to prevent damage or soiling to Equipment and Materials, or packaging.
- 2 Handle by methods to prevent bending or overstressing. Where lifting points are designated, lift components only at those points.
- 3 Provide additional protection to surrounding surfaces as necessary to prevent damage.

D. MAINTENANCE OF STORAGE:

- 1 Inspect stored Equipment and Materials on a scheduled basis.
- 2 Verify that storage facilities comply with manufacturer's product storage requirements, including environmental conditions continually maintained.
- 3 Verify that surfaces of products exposed to elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.
- 4 For mechanical and electrical equipment in long-term storage, provide manufacturers service instructions to accompany each item, with notice of enclosed instructions on exterior of package. Service Equipment on a regularly scheduled basis.

E. PROTECTION AFTER INSTALLATION: Provide substantial coverings as necessary to protect installed Equipment and Materials from damage from subsequent construction operations. Remove when no longer needed or as specified.

1.06 EXISTING EQUIPMENT AND MATERIALS:

A. EQUIPMENT AND MATERIALS TO BE REUSED: For Equipment and Materials specifically indicated or specified to be reused in the Work, use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work. Arrange for transportation, storage and handling of products which require off site storage, restoration, or renovation and pay all costs for such Work. Contractor may at his option, furnish and install new items in lieu of those specified to be reused. Remove, relocate and reinstall the following Equipment and Materials:

1. Traffic signs and posts.

B. EQUIPMENT AND MATERIALS NOT TO BE REUSED: The following Equipment and Materials to be removed shall remain City's property and are not to be reused in the Work. Remove from its location, prepare for handling and storage, and deliver to City.

1. As indicated on the Drawings.

C. Equipment and Materials designated to be removed but not reused or delivered to City, shall become the property of the Contractor and shall be removed from the site.

PART 2 -PRODUCTS

2.01 PRODUCTS AND MANUFACTURERS:

A. Specified in each applicable Section of Specifications, construction plans and the City's Approved Materials List (AML.)

2.02 PRODUCT SELECTION AND SUBSTITUTIONS:

A. Specified in Instructions to Bidders and General Conditions.

PART 3 -EXECUTION

3.01 MANUFACTURERS INSTRUCTIONS:

A. INSTALLATION:

1 When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions if not a part of Submittals, containers, or packaging to parties involved in the installation, including a copy to the City.

2 Maintain one complete set of instructions at the job site during installation and until completion.

3 Handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.

4 Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents, or approved in writing by manufacturer and the City.

5 Accurately locate and align with other Work, and anchor Equipment and Materials securely in place except as required for proper movement and performance.

6 Clean and protect exposed surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

END OF SECTION

SECTION 01610

DELIVERY, STORAGE AND HANDLING

PART 1 -GENERAL

1.01 GENERAL:

- A. This Section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY:

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. Schedule delivery to reduce long-term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.
- C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- F. Provide necessary equipment and personnel to unload all items delivered to the site.
- G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer or Engineer's representative. Notify Engineer verbally, and in writing, of any problems.

1.03 STORAGE AND PROTECTION:

- A. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the engineer by him. Instruction shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.
- B. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.
- C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation 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. Pre-cast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.

PART 2 -PRODUCTS – Not used.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01640

PRODUCTS AND SUBSTITUTIONS

PART 1 -GENERAL

1.01 PRODUCTS' LIST:

- A. Within 10 days after commencement date of Contract, submit to Engineer two copies of a complete list of all products proposed to be used, with name of the manufacturer and the installing subcontractor. Tabulate list by each specification section.
- B. For products specified under reference standards, include with listing of each product:
 - 1. Name and address of manufacturer.
 - 2. Trade name.
 - 3. Model or catalog designation.
 - 4. Manufacturer's data:
 - a. Performance and test data.
 - b. Reference standards.
- C. Contractor's Option: For products specified only by reference standards, select any product meeting that standard. For products specified by naming several products or manufacturers, select any one of the products or manufacturers names, which complies with the specifications.

1.02 SUBSTITUTIONS:

- A. For a period of 10 days after commencement date of Contract, Engineer may consider written requests from Contractor for substitution of approved products.
- B. Conditions: Refer to Supplementary Conditions. Requests by Contractor will be considered when reasonable, timely, fully documented and qualifying under one or more of the following circumstances:
 - 1 Related to an "or equal" or similar provision in contract documents.
 - 2 Required product cannot be supplied in time for compliance with Contract Time Requirements.
 - 3 Required product is not acceptable to governing authority, or determined to be non-compatible, or cannot be properly coordinated, warranted or insured or has other recognized disability as certified by Contractor.
 - 4 Substantial advantage is offered Owner after deducting offsetting disadvantages including delays, additional compensation to Engineer for redesign, investigation, evaluation and other necessary services and similar considerations.
- C. Submit a separate request for each product, three copies of each submittal, to include the following:
 - 1. Complete data substantiating compliance of proposed substitution with Contract Documents.

- a. Product identification, including manufacturer name and address.
 - b. Manufacturer's literature including product description, performance and test data and reference standards.
 - c. Samples where appropriate and/or requested.
 - d. Name and address of two similar projects on which product was used successfully in a similar application.
 - e. Detailed description of proposed construction method.
 - f. Drawings illustrating construction method.
- 1 Itemized comparison of proposed substitution with product or method specified.
 - 2 Date relating to changes in construction schedule; any change in the contract time; effect on other trades.
 - 3 Accurate cost data on proposed substitution in comparison with product or method specified, including a proposal of the net change in the contract sum.

D. The Engineer will be the sole judge of the acceptability of the proposed substitution.

E. In making request for substitution Contractor represents:

- 1 He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
- 2 He will provide the same warranties, guarantees or bonds for the substitution as for the product or method specified herein.
- 3 He will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.
- 4 He waives the right to claims for additional costs related to the substitution which may subsequently become apparent and waives all rights to additional payment and time which may subsequently be necessitated, by failure of the substitution to perform as specified, and for the required Work to make corrections thereof.
- 5 Cost data is complete and includes all related costs under his contract.

F. Substitutions will not be considered if:

- 1 They are indicated or implied on shop drawings or project data submittals without formal request submitted in accordance with the Contract Documents.
- 2 Acceptance will require revision of the Contract Documents.

G. After date bids are reviewed, approval of substitutions shall be governed by change order procedure.

1.03 PROCEDURAL REQUIREMENTS:

- A. General Limitations: Where possible, provide entire required quantity of each generic product, material or equipment from a single source; and, where not possible to do so, match separate products as closely as possible. To extend selection process is under Contractor's control, provide compatible products, materials and equipment. Where available and complying with requirements, provide standard products which have been used previously and successfully in similar applications, and which are recommended by manufacturers for applications indicated.

PART 2 -PRODUCTS – Not used. **PART 3 -EXECUTION** – Not used.

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED:

- A. Closeout procedures, final cleaning, project record documents, system demonstration, warranties and bonds.
- B. Closeout includes the general requirements near the end of the Contract Time in preparation for final acceptance, final payment, normal termination of the Contract, beneficial use by the Owner, and similar actions evidencing completion of the Work.

1.02 RELATED REQUIREMENTS:

- A. Section 01010: Summary of Work.
- B. Section 01050: Field Engineering.
- C. Section 01500: Construction Considerations.

1.03 CLOSEOUT PROCEDURES:

- A. Comply with procedures stated in the General Conditions and Supplemental General Conditions of the Contract Documents for issuance of the Certificate of Substantial Completion and the Certificate of Final Completion.
- B. When the Contractor considers that the Work has reached final completion, submit written certification that the Contract Documents have been reviewed, the Work has been thoroughly inspected, and that the Work is considered to be completed in accordance with the Contract Documents and is ready for inspection by the Engineer.
- C. In addition to submittals required by the conditions of the Contract, provide all other submittals required by the Owner, other governing authorities or regulatory agencies, and submit to the Engineer a final statement of accounting giving the total adjusted Contract Sum, previous payments, and the sum remaining due.
- D. The Engineer will issue a final change order reflecting approved adjustments to the Contract Sum not previously made by Change Order.

1.04 SUBSTANTIAL COMPLETION:

- A. When the Contractor considers the Work to be substantially complete, the Contractor will submit to the Engineer, or the Owner, as applicable:
 - 1 A written notice that the Work, or a designated portion thereof, is substantially complete.
 - 2 Special guarantees, warranties, workmanship bonds, maintenance agreements and similar documents.
 - 3 Occupancy permits, operating certificates, test certificates and similar releases enabling the Owner's full and unrestricted use of the work and access to services and utilities.
 - 4 Record drawings, maintenance manuals, project photographs, property survey and similar record information.
 - 5 Tools, spare parts, extra stocks of materials and similar physical items to the Owner.

6 Certification that all site temporary facilities and services, along with construction equipment, mock-ups and similar elements have been removed from the site and that all repairs, touch-ups and restorations of marred exposed finishes have been completed.

B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.

C. Should the Engineer determine that the Work is not substantially complete:

- 1 The Engineer will promptly notify the Contractor in writing, giving the reasons therefore.
- 2 The Contractor will remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
- 3 The Engineer will then re-inspect the Work.

D. When the Engineer finds that the Work is substantially complete, it will:

- 1 Prepare and deliver to the Owner a tentative Certificate of Substantial Completion, with a tentative list of items to be completed or corrected before final payment.
- 2 After consideration of any objections made by the Owner as provided in the General Conditions, and when the Engineer considers the Work substantially complete, it will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.05 FINAL SUBMITTALS

A. The following submittals, as applicable, are required prior to finalizing the Contract:

- 1 Final shop drawings (N/A)
- ~~2 Record drawings~~

B. All guarantees, bonds, certifications, licenses, and affidavits required for work and equipment must be filed with the Engineer.

1.06 RELEASE OF LIENS OR CLAIMS:

A. Satisfactory evidence of release or waiver of all liens or claims must be submitted to the Owner prior to finalizing the Contract.

1.07 FINAL INSPECTION:

A. When the Contractor considers the Work complete, it will submit written certification that:

- 1 The Contract Documents have been reviewed.
- 2 The Work has been inspected for compliance with the Contract Documents.
- 3 The Work has been completed in accordance with the Contract Documents.
- 4 The Work is in every way completed and ready for final inspection.

- B. The Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the Engineer consider that the Work is incomplete or defective:
 - 1 The Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2 The Contractor will take immediate steps to remedy the stated deficiencies, and send a second written certification to the Engineer that the Work is complete.
 - 3 The Engineer will re-inspect the work.
 - 4 When the Engineer finds that the Work is acceptable under the Contract Documents, it shall request the Contractor to make close-out submittals.

1.08 RE-INSPECTION FEES:

- A. Should the Engineer perform re-inspections due to the failure of the Work to comply with the claims of status of completion made by the Contractor:
 - 1 The Contractor will compensate the Engineer for such additional services.
 - 2 The Owner will deduct the costs of such additional compensation from the final payment to the Contractor.

1.09 CONTRACTOR'S CLOSE-OUT SUBMITTALS TO THE ENGINEER:

- A. Project record drawings.
 - 1 Record documentation of work on private properties
 - 2 Statement of Satisfaction from Property Owner of each and all private properties
- B. For work performed on private properties:
 - 1 Record documentation of work for each and all private properties
 - 2 Statement of Satisfaction from Property Owner of each and all private properties
- C. Contractor's affidavit of payment of debts and claims:
 - 1. Contractor's release or waiver of liens.
- D. Separate releases or waivers of liens for subcontractors, suppliers and others that have filed lien rights against property of the Owner in accordance with Section 713.06 Florida Statutes, together with a list of those parties.
- E. Final payment request with Consent of Surety for Final Payment and the Contractor's Certification of Final Completion.
- F. Certified copy of the Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance.

1.10 FINAL ADJUSTMENT OF ACCOUNTS:

- A. Submit a final statement of accounting to the Engineer. The statement will reflect all approved adjustments to the Contract Sum, including:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Approved Change Orders.
 - b. Allowances.
 - c. Unit Prices.
 - d. Deductions for uncorrected Work.
 - e. Deductions for liquidated damages.
 - f. Deductions for re-inspection payments.
 - g. Deductions for re-testing due to failed tests.
 - h. Other adjustments.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- B. The Engineer will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Order.

1.11 FINAL CLEANING:

- A. Perform prior to final inspection.
- B. Clean the site, sweep paved areas, rake clean other surfaces.
- C. Remove waste and surplus materials, rubbish and construction facilities from the project site and dispose of in a lawful manner.
- D. Remove stains, petrochemical spills and other foreign deposits.
- E. Except as otherwise indicated or requested by the Owner, remove temporary protection devices and facilities installed during the course of the Work to protect previously completed Work during the remainder of the construction period.
- F. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site or bury debris or excess materials, or discharge volatile or other harmful or dangerous materials into the environment.
- G. Where extra materials of value remain after completion of the Work, dispose of or store such materials for use by the Owner as indicated in these Specifications.

1.12 PROJECT RECORD DOCUMENTS:

- A. ~~Conform to Section 01720 Record Drawings.~~

1.13 WARRANTIES AND BONDS:

- A. Provide duplicate, signed, notarized originals. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- B. Submit material prior to final application for payment. For equipment put into use with Owner's permission during construction, submit within 10 days after first operation. For items of Work delayed materially beyond the date of Substantial Completion, provide updated submittals within 10 days after acceptance, listing the date of acceptance as the start of the warranty period.

1.14 FINAL APPLICATION FOR PAYMENT:

- A. The Contractor will submit the Final Application for Payment in accordance with the procedures and requirements stated in the General Conditions.

1.15 FINAL CERTIFICATE FOR PAYMENT:

- A. The Engineer will process the Final Application for Payment in accordance with the provisions of the General Conditions.

1.16 POST-CONSTRUCTION INSPECTION:

- A. Prior to expiration of one year from the date of Substantial Completion, the Engineer will make a visual inspection of the Project in company with the Owner and the Contractor to determine whether correction of Work is required, in accordance with the provisions of the General Conditions.
- B. The Engineer will promptly notify the Contractor, in writing, of any observed defects or deficiencies in the work.
- C. The Contractor shall immediately undertake all work required to remedy defects and repair the work to the satisfaction of the Engineer and the Owner.

PART 2 -PRODUCTS

2.01 ACCESSORIES:

- A. Furnish to the Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation.
- B. Accessory items include, but are not limited to, adequate oil and grease as required for first lubrication of equipment (after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other items as required for initial operation.

PART 3 -EXECUTION – Not used.

END OF SECTION

SECTION 01720

RECORD DRAWINGS

PART 1 GENERAL

1.01 DESCRIPTION:

The work covered under this section shall include furnishing the Engineer all information necessary for a complete set of Record Drawings.

1.02 PROJECT RECORD DOCUMENTS:

A. The Contractor shall maintain on site one set of the following record documents for use to record actual revision to the Work:

- 1 Construction Drawings.
- 2 Specifications.
- 3 Addenda.
- 4 Change Orders and other Modifications to the Contract.
- 5 Engineer's Field Orders or written instructions.
- 6 Reviewed Shop Drawings, product data, and samples.
- 7 Field test records.

1.03 MATERIALS:

A. The Contractor shall mark on the construction drawings of the Contract Documents all field information.

1.04 MAINTENANCE OF DOCUMENTS:

- A. Store documents in approved location apart from documents used for construction.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents available at all times for inspection by Engineer and City. Record drawing information shall be maintained concurrently with Pay Requests.

1.05 RECORD DRAWINGS:

- A. The Contractor shall provide record drawings for partial releases and final release submittals. With each submittal provide survey data, signed and sealed by the Contractor's Surveyor, to support elevation information depicted on the record drawings.
- B. Label each document "PROJECT RECORD" in neat large printed letters.
- C. **Keep documents current with construction progress. Do not permanently conceal any work until required information is recorded.**

~~D. General: The Record Drawings shall correctly and accurately be drawn to record actual construction:-~~

~~Horizontal location of pipes and other improvements shall be provided any time the pipe passes a permanent surface reference point. Permanent surface reference points must be permanent structures, manholes, catch basins, concrete sidewalk or concrete curbs. Edge of pavement and road intersections may not be used without the Engineer's approval. Any deviations from the alignment shown on the drawings must be noted.-~~

~~Existing utilities that are not shown on the plans that are found in the field are to be noted and recorded on the record drawings. Actual locations of all utilities shall be noted and recorded on the record drawings.-~~

- ~~1 Field changes of dimension and detail.-~~
- ~~2 Drainage and Control Structure inverts and weir elevations. Roadway, sidewalk, planters, parking area, and site perimeter elevations.-~~
- ~~3 Changes made by Work Change Directives or by Change Order.-~~
- ~~4 Details not on original Contract Drawings.-~~

~~E. Pressured Mains General:-~~

~~Record Drawings shall legibly and accurately depict record actual construction and showing the following, as a minimum:-~~

- ~~1 Material used to construct mains.-~~
- ~~2 Location and top of pipe elevation of all fittings, including sleeves, and valves by stationing and offsets-~~
- ~~3 Top of pipe elevation at every 25 feet and at every change of direction.-~~
- ~~4 Length of restrained pipe-~~
- ~~5 All elevations and horizontal control of all storm sewer, gravity sewers including laterals, electric cables, television cables, telephone cables, force mains and water mains which are crossed or exposed.-~~
- ~~6 Locations and elevations as required to define major horizontal/vertical pipe deflections/conflicts. Data shall include beginning and end of deflection/conflicts, all changes in elevations and alignment and the location and elevation of subject conflict item.-~~
- ~~7 Location and elevation of all connections to existing systems.-~~
- ~~8 Locations and elevations as required to describe all other improvements.-~~

~~F. Pressure Mains Specific Requirements:-~~

~~1. Receivables:-~~

- ~~a. One (1) CD or DVD in a jewel case. The disk label shall include the following: 1) Engineering and/or Survey Company Name with prepared by statement 2) Project Name 3) City of Lake Worth Project Number 4) Date the data is burned onto disk 5) Designate "Record Drawings", "Preliminary Record Drawings", or "Final Record Drawings"-~~
- ~~b. Four -24" by 36" hard copies, signed and sealed-~~
- ~~c. Weekly and/or with pay application: Everything in the ground shall be "as-built" and submit to Engineering Services in an electronic PDF format-~~
- ~~d. Auto-CAD Files must be submitted in DWG format, latest AutoCad version.-~~
- ~~e. Each file should be for one section of development and one layer included below. Multiple sections will not be accepted in one file.-~~
- ~~f. Tie into section corners in the Florida State Plane Coordinate System to insure proper orientation at each end of baseline. Section corner tie sheets can be obtained from the Palm Beach County Surveyor's web page-~~

~~2. Datum:-~~

~~a. As used in the design and shown on the Record Drawing; Horizontal datum shall be referenced to North American Datum of 1983, on the 1990 adjustment for Florida Transverse Mercator -East Zone.-~~

~~b. As used in the design and shown on the Record Drawing; Vertical datum shall be referenced to the National Geodetic Vertical Datum of 1929.~~

~~c. (Not used)~~

~~d. All record data shall be digitally positioned on the design drawings prepared by the engineer of record. Said design drawings shall be complete and include both plan and profile views of the infrastructure.~~

~~e. State Plane Coordinates shall be used in the electronic datum, station, off-set and elevations shall be shown on the plan~~

~~3. General FOR ALL LAYERS:-~~

~~a. All references to "proposed" and "plan" are to be removed from the Final Record Drawings~~

~~b. All lines, structures, and other items that are relocated will be removed and shown in the proper location (hand written notes and "x"ing out will not be allowed)~~

~~c. All record drawings will be signed and sealed by Certified Land Surveyor or Professional Engineer licensed to practice in the State of Florida. If certified by a Surveyor, P.E. will sign off stating that the record drawings was checked by the engineer, verifying that they inspected the work~~

~~d. Clearly mark existing infrastructure which is to remain.~~

~~e. Clearly mark existing infrastructure which has been abandoned, and how it was abandoned~~

~~f. Station, length, width and depth of flowable fill used~~

~~g. Record Drawings shall not be greater than 1" = 30' in scale~~

~~h. All Detail sheets shall be included with each record drawing~~

~~i. Location by station and elevation, width, depth and length of flowable fill used for all uses~~

~~j. Supply all surveys of the project and/or property~~

~~4. Water and Force Mains -TO BE SHOWN ON ONE layer:-~~

- ~~a. — Location of all meter boxes, valves, tees, bends, reducers, caps, plugs, fire hydrants, backflow preventers, water services, taps, air release valves, including top of pipe at ARV, and centerline of water main on station and offset not to exceed 100'. All horizontal deflections shall be called out-~~
- ~~b. — Top of pipe elevations should be shown on all tees, valves, bends, reducers, caps, plugs, centerline of water main not to exceed 100 lineal feet, and bottom flange of barrel section of the fire hydrant. All vertical deflections shall be called out-~~
- ~~c. — Restrained joint pipe length (station to station)-~~
- ~~d. — Manufacturer, model, usage, type and size of valves shall be shown on the plan-~~
- ~~e. — Numbered sample points locations needed for Health Dept. submittal (to be removed from "final" as-built)-~~
- ~~f. — Length of run between fittings, type of and size of pipe material-~~
- ~~g. — Call out variation (if it exists) in stationing of corporation compared to meter box-~~

~~5. Sanitary Sewers -TO BE LOCATED ON THE SAME layer AS WATER AND FORCE MAINS-~~

- ~~a. — Manhole rim elevation, invert elevations and directions-~~
- ~~b. — Length of run between sanitary structures, type of and size of pipe material with calculated percentage of slope for the run of pipe-~~
- ~~c. — Location of sanitary service wyes with station and offset, together with the invert elevation, station and offset, pipe diameter and material (only at clean-out)-~~
- ~~d. — Applicable lift station information, should be filled out on the detail sheet for lift stations-~~

~~6. Water/Sanitary/Storm Pipe Crossings and Separations -PART OF WATER, SANITARY, AND/OR STORM LAYER-~~

- ~~a. — Pipe types, sizes and material-~~
- ~~b. — Crossings; Top and bottom elevations of pipes crossing each other and the distance between the outside of the two lines-~~
- ~~c. — Separation; Distance between the OD of the two lines-~~

~~7. — Conflict Storm/Water/Sanitary Structures -PART OF EACH LAYER:-~~

- ~~a. — Top and bottom of casing-~~
- ~~b. — All info asked for in storm or sanitary manhole descriptions with the addition of top of all pipes.-~~

~~8. Casings -Part of each APPLICABLE layer:-~~

- ~~a. — Material and thickness-~~
- ~~b. — Top of and invert of casing-~~
- ~~c. — Length and station and offset of ends-~~
- ~~d. — If used, station and offset for vent, including tap location, and fittings-~~

~~9. Storm Sewers -TO BE LOCATED ON A separate layer:-~~

- ~~a. Station and offset to center of structure-~~
- ~~b. Manhole and catch basin rim elevation, outfalls and top of headwall and invert elevations and direction, weir elevations, bottom of manholes and catch basins (sumps)-~~
- ~~c. Length of run between storm structures, type of and size of pipe material with calculated percentage of slope for the run of pipe. Lengths to be measured from inside wall of connecting structures.-~~
- ~~d. Location of service connections (without manholes) together with the invert or top of pipe elevation, pipe diameter and material-~~
- ~~e. Dry retention, wet retention, dry detention, wet detention areas-~~
- ~~f. Exfiltration trenches, Station at beginning and end of system, width, depth-~~
- ~~g. Top of and toe of slope on berm elevation designed to stop flooding-~~

~~10. Street Lights -TO BE LOCATED ON A separate layer:-~~

- ~~a. Manufacturer, model, and height of poles shall be shown on the record drawings-~~
- ~~b. Manufacturer, model, and wattage and voltage of lights shall be shown on the record drawings-~~
- ~~c. Pull boxes, station and offset.-~~
- ~~d. Length of conduit runs between boxes and poles, type of, and size of pipe material. Show as laid in the ground, not as a wiring schematic, with amount, by color, type of, and size of wiring material-~~
- ~~e. Service connection, type (FP&L owned, City metered) station and offset-~~

~~11. Irrigation -TO BE LOCATED ON A separate layer:-~~

- ~~a. Backflow preventer, control stand location, control valve, zone, station and offset-~~
- ~~b. Main line piping size, material, lengths, depth-~~
- ~~c. Heads, Type (1/4, half, 3/4, full circle) zone, station and offset-~~
- ~~d. Control Stand, station and offset-~~

~~12. Landscaping -TO BE LOCATED ON A separate layer:-~~

- ~~a. Tree type, caliper, and height-~~
- ~~b. Tree grate, size, and model-~~
- ~~c. Station, elevation, length, width, and depth of Structural Soil used-~~
- ~~d. Top of and toe of slope on berm elevation for landscaping-~~

~~13. Private Construction Impacts to Right of Way -TO BE LOCATED ON A SEPARATE LAYER:-~~

- ~~a. Private utility or revocable easements in the City ROW's or on City property must be shown on the plan. Any improvements within the easement need to be shown and called out as private. The recording information should be on the as-built-~~
- ~~b. Privately owned lighting, irrigation and landscaping in the City right-ofway needs to be called out as private and identified-~~
- ~~c. All aerial and underground footer easements (in ROW)-~~

~~1.06 RECORDS:-~~

~~A. Maintain a complete and accurate log of control and survey data for project record documents as project progresses. Daily records of changes in location of piping, fixtures and other items shall be kept and recorded on the Record Drawings.~~

~~The Contractor shall review the completed Record Drawings and ascertain that all data furnished is accurate and truly represents the work actually installed. No Record Drawings information will be accepted from subcontractors.~~

~~1.07 SUBMITTAL:-~~

~~The project shall not be considered to be in substantial completion until Record Drawings have been submitted and accepted by the Engineer.~~

~~The Record Drawings shall be revised by the Contractor to reflect any changes which have occurred since the substantial completion submittal.~~

~~A. Prior to final payment, Record Documents shall be submitted to the Engineer in the following formats:-~~

- ~~1 Three complete sets on 24 x 36"~~
- ~~2 One CD with drawings in AutoCAD Release 2007 or later.~~

~~B. Accompany submittal with transmittal letter in duplicate, containing:-~~

- ~~1 Date.~~
- ~~2 Project title and number.~~
- ~~3 Contractor's name and address.~~
- ~~4 Title and number of each record document.~~
- ~~5 Signature of Contractor or his authorized representative.~~

~~C. The Contractor shall provide record drawings for partial releases and final release submittals. With each submittal provide survey data, signed and sealed by the Contractor's Surveyor, to support elevation information depicted on the record drawings.~~

~~**PART 2 - PRODUCTS** Not used.~~

~~**PART 3 - EXECUTION** Not used.~~

END OF SECTION

SECTION 02050

DEMOLITION AND RENOVATION

PART 1 -GENERAL

1.01 SCOPE OF WORK:

- A. Furnish all labor, materials, equipment, and incidentals required for demolition, renovation, removal and disposal work as shown on the Contract Drawings and as specified herein.
- B. Included, but not limited to, are demolition and removals of existing materials, equipment, or work necessary to install the new work as shown on the Contract Drawings and as specified herein. Demolition includes structural concrete, foundations, walls, doors, windows, structural steel, metals, roofs, masonry, attachments, appurtenances, piping, electrical and mechanical equipment, paving, curbs, walks, fencing, and other existing facilities.
- C. Demolitions and removals which may be specified under other Sections shall conform to the requirements of this Section.
- D. Where applicable, these specifications call attention to certain activities necessary to maintain and facilitate continuous operation of existing facilities during and immediately following construction and do not necessarily cover all of the required activities. The CONTRACTOR shall exercise due concern for existing facilities operation and shall direct all his activities toward maintaining continuous operation and minimization of operation.

1.02 SUBMITTALS:

- A. Submit to the ENGINEER as per Section 01300 for approval, six copies of proposed schedule of intended operations for demolition of any existing facilities prior to the start of work. Include in the schedule the coordination of shutoff, capping and continuation of utility services as required.
- B. Provide a detailed sequence of demolition and removal work to ensure the uninterrupted operation of the Owner's facilities.
- C. Before the start of demolition work, all modifications necessary to bypass the affected structure will be completed. Actual work will not begin until the ENGINEER has inspected, reviewed, and authorized the start of the demolition work, in writing.
- D. The above procedure must be followed for each individual demolition operation.

1.03 CONDITION OF STRUCTURES:

- A. The OWNER and the ENGINEER assume no responsibility for the actual condition of any structures to be demolished or modified.
- B. Conditions existing at the time of inspection for bidding purposes will be maintained by the OWNER insofar as practicable. However, variations within a structure may occur prior to the start of demolition work.

1.04 RULES AND REGULATIONS:

- A. The CONTRACTOR shall determine the applicability and file notifications to the appropriate agencies with regard to demolition work that requires clearances for asbestos containing material (ACMs) handling or any other materials requiring special management. It should be noted that, in any demolition event, notifications must be filed in accordance with the National Emission Standards for Hazardous Air Pollutants (NESHAPS) as described in 40 CFR Part 61, Subpart M and Chapter 62-204 of the Florida Administrative Code (FAC).
- B. No building or structure, or any part thereof, shall be demolished until an application has been filed by the CONTRACTOR with the appropriate Building Department and a permit issued. Any fee for this permit shall be the CONTRACTOR'S responsibility.

1.05 DISPOSAL OF MATERIAL:

- A. Where directed by the ENGINEER, salvageable material and equipment shall become the property of the OWNER. The CONTRACTOR shall dismantle all such items to a size that can be readily handled, clean and store on or adjacent to the site in a protected place specified by the ENGINEER, or loaded onto trucks provided by the CONTRACTOR.
- B. The OWNER will select the material and items of equipment that shall remain the property of the OWNER and which shall be stored where directed.
- C. Materials and items of equipment not selected for retention by the OWNER shall become the CONTRACTOR'S property and must be removed from the site and properly disposed of.
- D. Concrete, concrete block and excess bricks shall be disposed of as specified below.
- E. The storage or sale of removed items will not be allowed on the site.

1.06 TRAFFIC AND ACCESS:

- A. Conduct demolition and the removal of equipment and debris to ensure minimum interference with occupied or used facilities.
- B. Special attention is directed towards maintaining safe and convenient access to any existing facilities by personnel and vehicles.
- C. Do not close or obstruct accesses to used facilities without permission from the ENGINEER. Provide alternate routes around closed or obstructed access ways.

1.07 PROTECTION:

- A. Conduct operations to minimize damage by falling debris or other causes to adjacent facilities. Provide interior and exterior shoring, bracing, or support to prevent the movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.
- B. Exercise precautions for fire prevention. Acceptable fire extinguishing apparatus shall be available at all times in areas where demolition work is being performed using burning torches. Burning of demolition debris shall not be permitted on or near the site.

1.08 DAMAGE:

- A. Promptly repair damage caused to adjacent facilities by demolition operations as directed by the ENGINEER and at no cost to the OWNER. Repairs shall be made to a condition equal or better than that which existed prior to construction.

1.09 UTILITIES:

- A. Maintain existing utilities in service and protect against damage during demolition operations.
- B. Do not interrupt existing utilities serving occupied or used facilities, except when authorized by the ENGINEER. Provide temporary services acceptable to the ENGINEER during interruptions to existing utilities.
- C. The CONTRACTOR shall assist the OWNER in shutting off utilities required for the performance of demolition operations.
- D. The CONTRACTOR shall be solely responsible for making all necessary arrangements and for performing any necessary work involved in connection with the discontinuance or interruption of all utilities or services under the jurisdiction of the public and private utility companies.
- E. All utilities being abandoned shall be disconnected and terminated at the service mains in conformance with the requirements of the utility companies or the municipality owning or controlling them.

1.10 REMOVAL OF EXISTING PROCESS EQUIPMENT, PIPING AND APPURTENANCES:

- A. Subject to the constraints of maintaining the existing facilities in operation and prior to demolition, existing process equipment, non-buried valving, piping and appurtenances not necessary for the operation of the new facilities shall be removed.
- B. All equipment, piping and appurtenances shall be cleaned, flushed and drained. Equipment to be retained by the OWNER, as previously specified, shall be dismantled sufficiently and thoroughly cleaned and drained. All valves shall be left open. All discontinued piping shall be capped and sleeves and openings remaining after removal of the existing equipment, piping, and appurtenances shall be plugged and sealed as shown on the Drawings and as directed by the ENGINEER.

1.11 DEMOLITION:

- A. Demolition shall be performed to the limits shown on the Drawings or, if items to be demolished extend below or beyond said limits, then demolition shall be performed at no additional cost to the owner so as to satisfactorily achieve the intent of the drawings and specifications.
- B. Wet down work during demolition operations to prevent dust from arising. Provide protection from inclement weather for materials, equipment, and personnel located in partially dismantled structures.
- C. Existing, below grade slabs to be abandoned but not demolished shall have holes cut to allow for positive drainage and the prevention of flotation.

- D. Remove all existing work as indicated on the Drawings or as required and prepare adjoining areas for installation of the proposed work or for blocking up and filling in of existing openings.
- E. All demolition debris shall become the property of the CONTRACTOR and shall be removed from the site and disposed off the site in conformance with all applicable laws and regulations. Demolition debris shall not be used for fill or backfill.
- F. Blasting or the use of explosives will not be allowed for demolition work.
- G. CONTRACTOR shall remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste and debris of every sort shall be removed and the premises shall be left clean, neat and orderly.

1.12 MISCELLANEOUS CONCRETE SLABS AND SIDEWALKS:

- A. Remove miscellaneous concrete slabs and sidewalks where shown on the Drawings or where necessary for the construction of new structures or modifications of existing structures. All concrete sidewalks and curbing not required after the new work is constructed shall be removed and disposed of as specified hereinbefore.

PART 2 -PRODUCTS -Not Used.

PART 3 -EXECUTION -Not Used.

END OF SECTION

SECTION 02100

CLEARING AND GRUBBING

PART 1 -GENERAL

1.01 SCOPE OF WORK:

- A. Work under this section of the specifications includes clearing and grubbing as necessary for the construction and the disposal of materials and debris resulting from the clearing and grubbing operations, and the replacement of ornamentals damaged on or removed from abutting property. The Contractor is expected to visit the site of the work and determine for himself from visual inspection the extent of clearing and grubbing that is necessary for his operations.

1.02 DOT STANDARD SPECIFICATIONS:

- A. Unless otherwise specified herein, all work under this section shall conform with Florida DOT Standard Specifications, Section 110 -Clearing and Grubbing.

1.03 CLEARING:

- A. Clear and remove obstructions within the City's right-of-way only as required to provide adequate work space to accomplish the specified construction. Clearing consists of the removal of all trees, living or dead, stumps, down timber, brush, rubbish and all other objectionable debris from the area to be cleared unless indicated otherwise. The removal of trees or permanent structures within the aforementioned areas will be done only as indicated on drawings. Should the removal of valuable trees or shrubs be required, this work is to be done in cooperation with the City in order that they may be replanted, if so desired. Protect other trees and shrubs which are to remain from damage during the construction period.

1.04 GRUBBING:

- A. Grubbing will be performed where required, including, but not limited to, areas where fill will be placed, structures erected, or where other installations are required. It shall include the complete removal of all obstructions resting on or protruding from the surface of the existing ground to a depth of eighteen inches (18") below finished grade or surface of ground. Holes caused by grubbing operations shall be filled to the level of adjacent ground. Where excavation is done, all stumps, roots and deleterious material thereby exposed must be removed to a depth of eighteen inches (18") minimum below the excavated surface.

1.05 PRIVATE PROPERTY:

- A. Where working room is restricted, the contractor must provide protection for privately owned trees, shrubs, and structures bordering the right-of-way. The contractor shall take full responsibility for any damage done to private property.

1.06 DAMAGES:

- A. The contractor shall replace with plants of a like size and type in growing conditions, all grass, shrubbery, plants and other ornamental plants or planting on abutting private property which he removed or damaged due to his construction operations.

PART 2 -PRODUCTS -Not Used.

PART 3 -EXECUTION -Not Used. END OF SECTION

SECTION 02101

SUBSURFACE INVESTIGATIONS

PART 1 -GENERAL

1.01 GENERAL:

- A. ~~Data in the subsurface investigation reports was used for the basis of the design and is available to the Contractor for information only. Conditions are not intended as representations or warranties of accuracy or continuity between soil boring and pot-hole locations. The Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.~~
- B. Additional test boring, pot-hole, and other exploratory operations may be performed by Contractor, at the Contractor's option, and coordinated with the Owner with minimum 48 hours advance notification; however, no change in the Contract Sum will be authorized for such additional exploration.

1.02 GEOTECHNICAL INVESTIGATION:

- A. The geotechnical report performed:

1.03 TEST-HOLE INVESTIGATION:

- A. The sub-surface report performed by

PART 2 -PRODUCTS -Not Used.

PART 3 -EXECUTION -Not Used.

END OF SECTION

SECTION 02211

SITE GRADING

PART 1 -GENERAL

1.01 WORK INCLUDED

- A. Remove topsoil and stockpile on site for later use.
- B. Excavate sub-soil and reform to grades, contours and levels.
- C. Excavate or fill for roadways, walks, curbs, gutters, parking areas, landscaped areas and as shown on the Drawings.

1.02 RELATED WORK

- A. Section 02100: Clearing and Grubbing.
- B. Section 02225: Trenching, Backfilling and Compacting.
- C. Section 02260: Finish Grading.
- D. Section 02510: Asphaltic Concrete Paving.

1.03 EXISTING CONDITIONS

- A. Known underground, surface and aerial utility lines, and buried objects are based on best available data and indicated on the Drawings. Contractor shall verify all locations.

1.04 PROTECTION

- A. Protect trees, shrubs and lawns and other features remaining as part of final landscaping.
- B. Protect bench marks, and existing structures, fences, roads, sidewalks, paving and curbs against damage from equipment and vehicular traffic.
- C. Protect aerial, surface, or underground utility lines or appurtenances which are to remain.
- D. Repair any damage, at no cost to Owner.

PART 2 -PRODUCTS

2.01 MATERIALS

- A. Excavated fill material: Soil free from roots, rocks larger than 3-inches, and building debris.
- B. Additional fill material: Shall be approved by the Engineer.

PART 3 -EXECUTION

3.01 PREPARATION

- A. Establish and identify required lines, levels, contours and datum.
- B. Maintain bench marks, monuments, and other reference points. Re-establish if disturbed or destroyed, at no cost to Owner.
- C. Before start of grading, establish the location and extent of utilities in the work areas. Notify utilities to remove and relocate lines which are in the way of construction.
- D. Maintain, protect, reroute or extend as required existing utilities to remain which pass through the work area.

3.02 REMOVAL OF TOPSOIL

- A. Topsoil of horticultural value shall be stripped from areas of construction under this contract and stockpiled in area designated by Engineer. Said material shall be stockpiled separately from fill material.
- B. Do not permit topsoil to be mixed with subsoil
- C. Do not strip topsoil when wet.
- D. Do not drive heavy equipment over stockpiled topsoil.

3.03 ROUGH GRADING

- A. Rough grade site to required levels, profiles, contours and elevations ready for finish grading and surface treatment. Maintain the following:
 - 1 Sodded areas: 4 1/2 inches below finished grade elevation.
 - 2 Seeded areas: 6 inches below finished grade.
 - 3 Paved areas: 18 inches below finished grade elevations.
 - 4 Shrub beds: 24 inches below finished grade elevations.
 - 5 Flower beds: 18 inches below finished grade elevations.
 - 6 Concrete sidewalks: 8 inches below finished grade elevations.
- B. Prior to placing fill material over undisturbed subsoil, scarify surface to depth of 6 inches.

3.04 SURPLUS MATERIAL

- A. Remove surplus materials from site.
- B. Dispose of surplus material at no cost to Owner.

END OF SECTION

SECTION 02225

EXCAVATION, BACKFILL, AND COMPACTION

PART 1 -GENERAL

1.01 SCOPE OF WORK:

- A. The extent of trenching, backfill and compacting is shown on the drawings and/or specified. This section includes furnishing equipment, labor and material, and performing all operations necessary and incidental to perform the required work.

1.02 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS:

- A. American Association of State Highway and Transportation Officials (AASHTO).
- B. Florida Department of Transportation "Standard Specifications for Road and Bridge Construction," Sections 120 and 125, 2013 Edition.
- C. Florida Trench Safety Act (90-96), CS/HB 3183.
- D. Underground Facility Damage Prevention and Safety Act (FS556).

1.03 TRENCH SAFETY SYSTEM:

- A. The Contractor shall follow the provisions of the "Florida Trench Safety Act", which incorporates OSHA Standards 29CFR's 1926.650, Subpart P as the State's trench safety standards. Trench excavation exceeding 5 feet in depth shall have an adequate safety system consisting of sheeting and shoring, suitable trench box, or other suitable system meeting the requirements of the Act.
- B. Contact Sunshine at 1-800-432-4770 or 811.
- C. The Contractor shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to retain side slopes to ensure that persons working in or near the excavation are protected.

PART 2 -PRODUCTS

2.01 CONSTRUCTION WATER:

- A. Conform to Section 01019 GENERAL REQUIREMENTS.

PART 3 -EXECUTION

3.01 CLEARING OF THE SITE AND PREPARATION OF RIGHT-OF-WAYS:

- A. Conform to Section 02100 CLEARING AND GRUBBING.

3.02 DISPOSAL OF CLEARED MATERIAL:

- A. Conform to Section 02100 CLEARING AND GRUBBING.

3.03 OBSTRUCTIONS:

- A. This item refers to obstructions which may be removed and do not require replacement. Remove obstructions within the trench area or adjacent thereto without additional compensation. Obstructions of such include, but are not limited to, tree roots, stumps, abandoned piling, buildings and concrete structures, logs, and debris of all types without additional compensation. The Engineer may, if requested, make changes in the trench alignment to avoid major obstructions, if such alignment changes can be made, within the easement or right-of-way without adversely affecting the intended function of the facility, at no additional cost to the Owner.
- B. Dispose of obstructions removed from the excavation in accordance with Section 02100 CLEARING AND GRUBBING.

3.04 PROTECTION OF EXISTING UTILITIES AND STRUCTURES:

- A. Conform to Section 01019 GENERAL REQUIREMENTS.

3.05 TRENCH EXCAVATION:

- A. The Contractor shall perform all aspects of excavation, of every description, and of whatever substance encountered to the dimensions and depths indicated on the drawings or as necessary. Excavation shall be unclassified regardless of material encountered. Unless otherwise indicated, excavation shall be by open cut.

No separate payment for excavation as such shall be made. The cost thereof shall be included in the unit prices of pipe installation.

The Contractor shall make their own estimate of the kind and extent of the various materials which will be encountered in the excavation. Undercutting will not be permitted, except when ordered by the Engineer.

- B. Where it is necessary to trim branches for equipment clearance, all severed root ends or cuts to branches over 3" diameter shall be treated with an asphalt base pruning paint. Backfill over exposed roots as soon as possible.
- C. Except in rock-and-water-bearing earth, mechanical excavation shall be limited to four inches above the elevation of the pipe invert. All additional excavation shall be made manually. Excavation in rock shall be made by a method approved by the Engineer.

3.06 SHORING, SHEETING AND BRACING:

- A. The Contractor shall provide all trench and structural bracing, shoring, or sheeting necessary to construct and protect the excavation from damage to existing utilities of all types, roadways, structures, and private property, and as required for the safety of the public, and employees.
- B. Increase trench widths accordingly by the thickness of the sheeting. Maintain sheeting in place until the pipe has been placed and backfilled at the pipe zone.

- C. Sheeting shall be removed by the Contractor during backfilling operations in a manner that will not damage the pipe or permit voids in the backfill.
- D. If approved by the Engineer, sheeting can be left in place. The top of such sheeting left in place shall be cut off at a minimum elevation of 2.5 ft. below finished grade.
- E. All sheeting, shoring and bracing of trenches shall conform to the safety requirements of the Trench Safety Act and to the Federal, State or local public agency having jurisdiction.

3.07 DEWATERING:

- A. Conform to Section 02401 DEWATERING.

3.08 DISPOSAL OF REMOVED WATER:

- A. Water pumped from the trench or other excavation shall be disposed of in storm sewers having adequate capacity, canals or suitable disposal pits as approved by the Engineer. The Contractor is responsible for acquiring all permits required to discharge the water and shall protect waterways from turbidity during the dewatering operation. In areas where adequate disposal sites are not available, partially backfilled trenches may be used for water disposal only when the Contractor's plan for trench disposal is approved in writing by the Engineer. The Contractor's plan shall include temporary culverts, barricades and other protective measures to prevent damage to property or injury to any person or persons.
- B. Dispose of the water in a manner to prevent flooding of streets and damage to adjacent property. Drainage of trench water through the pipeline under construction is prohibited.
- C. Engines driving dewatering pumps shall be equipped with residential type mufflers.

3.09 TRENCH WIDTH:

- A. The minimum width of the trench shall be equal to the outside diameter of the pipe at the joint plus 12 in. each side of pipe for sheeted trench, with the maximum width of trench, measured at the top of the pipe, not to exceed the outside pipe diameter, plus the appropriate sloped trench wall to meet OSHA requirements, unless otherwise shown on the drawings.
- B. Confine trench widths to dedicated rights-of-way, unless construction easements have been obtained from the effected property Owners.
- C. Trench walls shall be maintained vertical from the bottom of the trench to a line measured at the top of the pipe. From the top of the pipe to the surface the trench walls shall be as vertical as possible under soil condition.

3.10 OPEN TRENCH:

- A. The extent of open trench shall be limited so that there is no more than 100 feet of open trench in advance of the pipe laying operation.
- B. Pipe trenches across roadways and driveways shall be backfilled as soon as pipe is installed. Where, in the opinion of the Engineer, adequate detour facilities are not available, no trench shall be left open across a roadway or commercial property driveway where adequate detour routes are not available for a period in excess of 30 minutes, or as directed by the governing authority.

- C. All open trenches shall be protected by the Contractor with barriers, warning devices and traffic control devices, which shall be kept in the correct position, properly directed and clearly visible at all times.
- D. All open trenches shall be backfilled at the end of the day and protected with appropriate signage, reflective tapes and devices. The barrier, warning and traffic control devices, as conformed to F.D.O.T. rules and regulations, shall be suitably lighted at all times.

3.11 LOCATION OF EXCAVATED MATERIALS:

- A. Excavated materials suitable for backfill shall be piled in an orderly manner at a sufficient distance from the trench to avoid overloading and to prevent slides or cave-ins.
- B. Place the excavated material only within the construction easement, right-of-way or approved working area. Do not obstruct any private driveways or public traveled roadways, streets, sidewalks, or driveways. Conform to all Federal, State and local codes governing the safe loading of all trenches with excavated material.

3.12 BOULDER REMOVAL:

- A. Where encountered in the trench bed, all rocks, stones, boulders or concrete, having any dimension larger than permitted to be used for backfill in the paragraph entitled "TRENCH BACKFILL" of these specifications, shall be excavated to a depth of 8" below the bottom of the pipe and shall be removed from the site and disposed of by the Contractor. All undercut trench excavation shall be backfilled and tamped with materials as specified in the following paragraphs entitled "UNSTABLE SUBGRADE".
- B. Where bell and spigot pipe is used, the 8 inch cushion shall be maintained under the bell as well as under the straight portion of the pipe.

3.13 UNSTABLE SUBGRADE:

- A. All pipe and other structures shall be provided with a stable foundation; any material which, by reason of kind or condition, is not or cannot be made stable by drainage or compaction shall be removed or replaced.
- B. In the event that an unstable material is encountered at or below the excavation depth specified and/or shown on the drawings, the Engineer shall be notified. Such material shall be removed and replaced with suitable material.
- C. For the purpose of this specification, muck, peat, and other highly organic soils shall be considered to be unstable material. In addition, any soil which is or might become wet to such a degree that its moisture content is equal to or greater than 90% of its liquid limit will have to be specifically approved by the Engineer with regard to stability or shall be considered to be unstable material requiring removal and replacement.
- D. If muck is encountered, it shall be completely removed in accordance with F.D.O.T. Roadway and Traffic Design Standard Index 500.

3.14 OVERDEPTH EXCAVATION:

- A. Where unauthorized excavation occurs, the bottom of the excavation shall be brought up to the proper excavation elevation utilizing suitable and properly compacted backfill material at no additional expense to the Owner.

3.15 DISPOSAL OF EXCESS EXCAVATED MATERIAL AND DEBRIS:

- A. The Contractor, at his own expense, shall dispose of all excavated materials not suitable for backfill at an appropriate legal site.

3.16 OTHER STRUCTURES:

- A. Excavation shall be carried to the depths indicated and shall conform to the shape of the structure with sufficient allowance for setting forms, inspection, and proper performance of the work.

3.17 TRENCH BACKFILL:

A. MATERIAL:

- 1. Backfill material shall be excavated material, predominately sandy material and essentially free of rock, stones, organic material, asphaltic concrete, clay, concrete, boulders and other deleterious material.

- a. Pipe Embedment:

- The backfill material required for placement around the pipe and to a depth of 1 foot above the top of the pipe shall consist of clean, fine to medium sand or a mixture of sand, shell or crushed rock with a maximum size of 3/4" and not more than 10 percent passing the U.S. Standard Number 200 sieve, properly graded and mixed so that fine grain material from the side walls of the trench or backfill above the embedment will not migrate into the backfill material.

- b. Above Pipe Embedment:

- The backfill material used to bring the trench to final subgrade from a depth of 1 foot above the top of the pipe shall consist of sand or a mixture of clean mineral soils with no particle size larger than 3-1/2".

- c. Additional Fill:

- If sufficient suitable backfill material is not available from the excavation, additional fill meeting the above requirements shall be provided and paid for by the Contractor.

B. BACKFILL OPERATION:

- 1. Trench:

- a. The pipe trench shall be backfilled immediately after the pipe is laid, unless other protection for the pipe line is provided. Backfill materials shall be selected, deposited and compacted so as to eliminate the possibility of lateral displacement of the pipe.

- 2. Under Pipe:

- a. The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe. The pipe shall be carefully bedded in soil foundation that has been accurately shaped and rounded to conform to the lowest 1/3 of the outside circular portion of the pipe for its entire

length, and when necessary, shall be tamped to secure uniform, firm support.

b. Where bell and spigot pipe is used, the bell holes shall be deep enough to ensure that the bell does not bear on the bottom of the excavation, and shall not be excessively wide in the longitudinal direction of the pipe.

3. Over Pipe:

a. From the centerline of the pipe, fittings and appurtenances, to an elevation two feet above the top of the pipe, the trench shall be backfilled by hand or by approved mechanical methods.

b. Backfilling material shall be deposited in the trench for its full width on each side of the pipe and appurtenances. Backfilling shall be carried out simultaneously on both sides of the pipe.

c. Do not push backfill into the trench in such a way as to permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Under no circumstances allow sharp, heavy pieces of material to drop directly onto the pipe or the tamped material around the pipe.

C. COMPACTION EQUIPMENT:

1 Compaction equipment shall be of suitable type and adequate to obtain the amount of compaction specified. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations and shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort.

2 Hydro-compaction (puddling) of the backfill material will not be permitted.

D. PLACING AND COMPACTION:

1 The backfill material placed around the pipe to final subgrade, shall be compacted to a density of not less than 98% the maximum dry density as determined by of AASHTO Method T-180.

2 The fill lift thickness shall be uniformly compacted and restricted to 8 inches maximum. Particular care shall be taken to insure that the backfill at the haunch is free from voids and is properly compacted.

E. COMPACTION TESTS:

1 The Engineer may at any time instruct the Contractor to partially excavate a previously backfilled trench or temporarily backfilling of a short section of the trench for the purpose of obtaining measurements of the density of the backfill.

2 The cost of the partial excavation and restoration of the backfill will be paid for by the Contractor.

3 The City will pay for the proctors and density tests. Any test failures will be paid by the Contractor.

4 Proctor and density tests shall be taken along the pipe, and at locations of manholes, inlets, and valves. The location, depth, and number of the tests shall be as selected by the Engineer. Maximum intervals between tests shall be 300 feet.

F. STRUCTURAL ELEMENTS:

- 1 Backfill adjacent to structural elements shall be placed, as far as practical, as the adjacent structural elements have been completed and accepted. Backfilling against concrete shall be done only when approved.
- 2 Compaction adjacent to structural elements shall be performed by the means of a self propelled, hand led vibratory compactor. The compactor shall impart a dynamic force of not less than 7000 pounds.

G. MISCELLANEOUS:

Backfilling and compacting around meter boxes, valve boxes, manholes, storm inlets, and other structures shall be accomplished in the same manner as the connected pipe. Extreme care shall be used in backfilling well point holes to prevent voids and settlement. If necessary, the holes should be plugged with a flowable fill, such plugging to be at the expense of the Contractor.

3.18 MAINTENANCE OF AREA UNDER CONSTRUCTION:

- A. As specified in this section, the Contractor shall keep the pipe laying operation as close to the excavation operation as possible during the execution of the work. Construction activity within this work area shall include all phases of the pipe laying operations including dewatering equipment, excavation, pipe laying, backfilling of trenches and the completion of the restored base construction as specified. No open trench will be left unprotected overnight or on weekends.
- B. This maintenance shall include, but not be limited to, the addition of crushed rock backfill material or temporary asphalt pavement in paved areas to keep the surface of backfilled trenches reasonably smooth, free from ruts and potholes and suitable for normal traffic flow.
- C. No additional payment will be made for the maintenance of the trench backfill prior to completion of the work outlined above.

3.19 RESTORATION OF SURFACE IMPROVEMENTS:

A. GENERAL:

- 1 All surface improvements on public or private property which have been damaged or removed during excavation or any of the other Contractor's operation or other various construction activities shall be restored to conditions equal to or better than conditions existing prior to beginning work.
- 2 These surface improvements include, but are not limited to, grass plots, sod, shrubbery, ornamental trees, signs, fences, mailboxes and other improvements on public or private property.
- 3 Road shoulders, alleys and driveways of shell, limerock, stabilized soil or gravel, where disturbed, shall be restored with like materials as removed. There shall be no mixing of unlike materials. The disturbed area shall be replaced with the appropriate materials to a minimum depth to restore it to a condition equal to or better than conditions existing prior to beginning work.
- 4 Roadways other than paved streets, where disturbed, shall be replaced with like materials to a minimum compacted thickness of twelve (12) inches. There shall be no mixing of unlike materials. These roadways shall be compacted to a minimum of 98% of the maximum dry density as determined by AASHTO Method T-180.
- 5 No additional cost for replacement of roadways other than paved streets will be allowed by the Owner.

B. PAVEMENT, CURB AND SIDEWALK REMOVAL:

1 Cut all bituminous and concrete pavements, regardless of the thickness, and all curbs and sidewalks, prior to excavation of the trenches with an approved pavement saw, hydro hammer, or approved pavement cutter. Unless otherwise indicated on the Plans, the width of the pavement cut shall be at least equal to the required width of the trench at ground surface.

2 Replacement concrete sidewalks shall be restored with a new modular panel, and the old panels shall be completely removed. No partial panels will be accepted.

3 Pavement and concrete materials removed shall be hauled from the site and not used for trench backfill.

4 The Contractor shall remove pavements as part of the trench excavation. The material from permanent pavement removal shall be carefully separated from trench excavation material and disposed of by the Contractor.

3.20 WARRANTY:

A. In conformance with Section 01019 GENERAL REQUIREMENTS.

END OF SECTION

SECTION 02230

ROCK BASE COURSE

PART 1 -GENERAL

1.01 SECTION INCLUDES

- A. Compacted subgrade.
- B. Stabilized subgrade.
- C. Coquina, limerock, and shellrock base courses.

1.02 REFERENCES

- A. Florida Department of Transportation -Standard Specifications for Road and Bridge Construction, 2013, herein after referred to as the FDOT Specifications. This document must be onsite during the Work.
- B. ASTM C136-01 -Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D2922-96 -Density of Soil-Aggregate in Place by Nuclear Methods.
- D. AASHTO T 180/ASTM D1557-00 – Laboratory Compaction Characteristics of Soil Using Modified Effort.

1.03 TESTS

- A. Testing of the rock for compliance with this specification will be preformed when it is delivered to the project site by an independent testing laboratory. Contractor is responsible for scheduling tests and for the coordination of the testing with the testing laboratory and Engineer. Tests are to be paid for as specified in the Division 1: General Requirements.

PART 2 -PRODUCTS

2.01 MATERIALS

- A. Compacted Subgrade: Local sands approved in advance by the Engineer. Free from large clods, rocks larger than one inch, organic material or other extraneous material.
- B. Stabilized Subgrade: In accordance with Section 914 of the FDOT Specifications.
- C. Coquina Rock Base: In accordance with Section 915 of the FDOT Specifications.
- D. Limerock Base: In accordance with Section 911 of the FDOT Specifications.
- E. Shellrock Base: In accordance with Section 913A of the FDOT Specifications.
- F. Prime Coat: Meets Sections 300-2.1 and 916 of the FDOT Specifications.

PART 3 -EXECUTION

3.01 PREPARATION

- A. Prepare, compact, and grade compacted subgrade in accordance with Section 120-9 and 120-11 of the FDOT Specifications.
- B. Prepare, compact, and grade stabilized subgrade in accordance with Section 160-3, 1604, and 160-5 of the FDOT Specifications.
- C. Clean subgrade surface of all foreign matter.
- D. Verify gradients and elevations of subgrade are correct.

3.02 PLACING BASE MATERIAL

- A. Spread base material over prepared subgrade to a total compacted thickness as shown on the Drawings.
- B. Place in 6 inch maximum lifts. Compact to 98 percent of maximum density per AASHTO T 180, Method D.
- C. Check finished surface with a template cut to the required crown and with a 15 foot straight edge laid parallel to the centerline of the pavement. Correct all irregularities greater than 1/4 inch by scarifying, and removing or adding base material as may be required. Re-compact area to meet specified density requirements.

3.03 PRIME COAT APPLICATION

- A. Apply prime coat in accordance with Section 300-7 of the FDOT Specifications except Contractor to apply prime coat at a rate of 0.15 gallons per square yard over a base course free of all loose and foreign materials which may prevent proper bond. The moisture content of the base must not exceed 90 percent of the optimum moisture content of the material.

3.04 FIELD OBSERVATIONS

- A. Engineer to review the subgrade prior to placing base course.
- B. Engineer to review the finished base prior to application of the prime coat and paving.

3.05 PROTECTION

- A. Any roadway base damaged, disturbed, or destroyed in excess of maximum pipe trench widths detailed on the Drawings must be replaced in accordance with the Drawings and Specifications at no additional expense to the Owner.

END OF SECTION

SECTION 02234

CRUSHED CONCRETE BASE COURSE

PART 1 -GENERAL

1.01 SECTION INCLUDES

- A. Compacted subgrade.
- B. Crushed concrete base course.
- C. Prime coat.

1.02 REFERENCES

- A. Florida Department of Transportation – Standard Specifications for Road and Bridge Construction, 2013, herein after referred to as the FDOT Specification. This document must be onsite during the Work.
- B. AASHTO M145 – Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes.
- C. AASHTO T180/ASTM D1557-00 – Laboratory Compaction Characteristics of Soil Using Modified Effort.
- D. ASTM C136-01 – Sieve Analysis of Fine and Coarse Aggregates.
- E. ASTM D2922-96 – Density of Soil-Aggregate in Place by Nuclear Methods.

1.03 TESTS

- A. Testing of the crushed concrete for compliance with this specification will be done when it is delivered to the project site. All tests will be performed by an independent testing laboratory. Contractor is responsible for scheduling tests and for the coordination of the testing with the testing laboratory and Engineer. Tests are to be paid for as specified in the Division 1: General Requirements.

PART 2 -PRODUCTS

2.01 MATERIALS

- A. Compacted Subgrade: Local sands approved in advance by the Engineer. Free from large clods, rocks larger than one inch, organic material or other extraneous material.
- B. Crushed Concrete Base Course: Local material used for roadway base material which is comprised of crushed Portland Cement and “washout” concrete. Material must meet AASHTO M145 Soil Classification A-1B(o) or A-1a and obtain a minimum Limerock Bearing Ration (LBR) of 100. At least 97 percent (by weight) of the material must pass a 3-1/2 inch sieve and be uniformly graded to dust. Crushed concrete base must contain a minimum of 50% (by weight) “washout” concrete material and a maximum of 50% (by weight) of concrete rubble material. All crushing to meet the size requirements must be completed before the material is placed on the road.

C. Prime Coat: Meets Sections 300-2 and 916 of the FDOT Specifications.

PART 3 -EXECUTION

3.01 PREPARATION

- A. Prepare, compact, and grade subgrade in accordance with Sections 120-9 and 120-11 of the FDOT Specifications except that the subgrade is to be compacted to a minimum density of at least 98% of the maximum density determined by AASHTO T180.
- B. Clean subgrade surface of all foreign matter.
- C. Verify gradients and elevations of subgrade are correct.

3.02 PLACING BASE MATERIAL

- A. Spread base material over approved subgrade to a total compacted thickness as designated on the Drawings.
- B. Compact base using vibrator rollers to a density not less than 98 percent of the maximum density determined by AASHTO T180, Method D.
- C. Moisture content of top half of base must not exceed 90 percent of the optimum moisture content.
- D. Check finished surface with a template cut to the required crown and with a 15 foot straight edge laid parallel to the centerline of the pavement. Correct all irregularities greater than ¼ inch by scarifying and removing or adding base material as may be required. Recompect area to meet specified density requirements.

3.03 PRIME COAT APPLICATION

- A. Prime coat in accordance with Section 300-7 of the FDOT Specifications except Contractor to apply prime coat at a rate of 0.15 gallons per square yard over a base course free of all loose and foreign materials which may prevent proper bond.

3.04 FIELD OBSERVATIONS

- A. Engineer to review the subgrade prior to placement of base.
- B. Engineer to review base prior to application of the prime coat and paving.

3.05 PROTECTION

- A. Any roadway subgrade or base damaged, disturbed, or destroyed in excess of maximum trench widths detailed on the Drawings must be replaced in accordance with the Drawings and Specifications at no additional expense to the Owner.

END OF SECTION

SECTION 02235

LIMEROCK BASE COURSE PRIMED

PART 1 -GENERAL

1.01 SCOPE

- A. This item shall consist of the construction of a base course composed of limerock including the application of a bituminous prime coat. It shall be constructed on the prepared subgrade in accordance with these specifications and shall conform to the dimensions, lines, grades and cross sections shown on the plans.

1.02 REFERENCES

Standards applicable to this Specification shall be:

- A. American Association of State Highway and Transportation Officials Standard Specifications (AASHTO).
 - 1 AASHTO T49-80 -Standard Method of Test for Penetration of Bituminous Materials.
 - 2 AASHTO M81-75 (latest ed.) -Standard Specification for Cut-Back Asphalt (Rapid-Curing Type).
 - 3 AASHTO T180-74 (latest ed.) -Standard Method of Tests for Moisture-Density Relations.
- B. Florida Department of Transportation Standard
- C. Specifications (F.D.O.T.).
 - 1 FDOT Section 200, Rock Base (latest ed.).
 - 2 FDOT Section 300, Prime and Tack Coats for Base Courses (latest ed.)
 - 3 FDOT Section 911, Limerock Material for Base and Stabilized Base (latest ed.)

1.03 SUBMITTALS

- A. The contractor will, at least ten days prior to start of work, submit in writing the source of all materials to be used.
- B. The Contractor will, without additional compensation, submit such tests as may be required by the Engineer.

1.04 MEASUREMENT AND PAYMENT

- A. See Section 01025.

PART 2 -PRODUCTS

2.01 LIMEROCK

Except as might be specifically shown otherwise, all limerock material and the sources thereof shall be furnished by the Contractor. Any limerock material occurring in State furnished borrow areas shall not be used by the Contractor in constructing the base, unless permitted by the plans or other contract documents.

A. Composition -The minimum percentage of carbonates of calcium and magnesium in the limerock material shall be 70. The maximum percentage of water-sensitive clay mineral shall be 3%. Determination shall be at the option of the Engineer.

B. Liquid Limit and Plasticity Requirements

- 1 Material for Limerock Base: The liquid limit shall not exceed 35 and the material shall be non-plastic.
- 2 Material Used in Limerock Stabilized Base: The liquid limit shall not exceed 35 and the plastic index shall not exceed 10.

C. Mechanical Requirements

1. Deleterious Material -Limerock material shall not contain cherty or other extremely hard pieces, or lumps, balls or pockets of sand or clay size material in sufficient quantity as to be detrimental to the proper bonding, finishing, or strength of the limerock base.

2. Gradation and Size Requirements

a. For Limerock Base -At least 97 percent (by weight of the material shall pass a 3-1/2 inch sieve and the material shall be graded uniformly down to dust. The fine material shall consist entirely of dust of fracture. All crushing or breaking-up which might be necessary in order to meet such size requirements shall be done before the material is placed on the road.

b. For Limerock Stabilized Base -For this use the limerock material shall meet the requirements of 911-5.2.1 except that 97 percent shall pass the 1-1/2 inch sieve.

D. Limerock Bearing Ratio Requirements -Limerock material used in construction of limerock base shall have an average LBR value of not less than 100. The average LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.

2.02 PRIME COAT

A. The material used for prime coat shall be cut-back Asphalt Grade RC-70 or RC-250 meeting the requirements of (FDOT 916-2) Emulsified Asphalt Grades SS-1 or CSS-1, SS-1H or CSS-1H diluted in equal proportion with water; Asphalt Emulsified Asphalt Grade AE-60, AE-90, AE-150 or AE-200 diluted at the ratio of 6 parts emulsified asphalt to 4 parts water; special MS-Emulsion diluted at the ratio of 6 parts emulsified asphalt to 4 parts water; Asphalt Emulsion Prime 9AEP) meeting the requirements of (FDOT 9164), Emulsion Prime (RS type) meeting the requirements of (FDOT 916-5), or other types and grades of bituminous material which may be called for in the plans or Special Provisions.

The Contractor may select any of the specified bituminous materials unless the plans or Special Provisions indicate the use of a specific material. Types and Grades of bituminous material other than those specified above may be allowed if it can be shown that the alternate material will properly perform the function of prime coat material.

- B. Cover Material for Prime Coat -If an emulsified asphalt is used for prime coat, the Engineer may require that cover material be hot-asphalt coated (mix to contain from two to four percent asphalt-cement) if necessary to achieve a prime coat which will remain reasonably intact until the surface course is placed.

If material other than emulsified asphalt is used for the prime coat, the cover material shall be either sand (bare or hot-asphalt coated) or screenings, at the Contractor's option. The sand shall be nonplastic and free from any appreciable amount of silt, clay balls and root particles, and from any noticeable sticks, trash, vegetation or other organic matter. Screening shall be as specified in FDOT 902.5.

PART 3 -EXECUTION

3.01 TRANSPORTING LIMEROCK

- A. The limerock shall be transported to the point where it is to be used, over rock previously placed if practicable, and dumped on the end of the preceding spread. Hauling over the subgrade and dumping on the subgrade will be permitted when these operations will not be detrimental to the base as determined by the Engineer.

3.02 EQUIPMENT

- A. Limerock Base -The rock shall be spread by mechanical rock spreaders, equipped with a device which strikes off the rock uniformly to laying thickness, and capable of producing an even distribution of the rock. For crossovers, intersections and ramp areas; for roadway widths of 20 feet or less; for the main roadway area when forms are used and for any other areas where the use of a mechanical spreader is not practicable; spreading may be done by bulldozers or blade graders.
- B. Pressure Distributor -The pressure distributor shall be equipped with pneumatic tires having a sufficient width of rubber in contact with the road surface to avoid breaking the bond or forming a rut in the surface. The distance between the centers of openings of the outside nozzles of the spray bar shall be equal to the width of the application required, within an allowable variation two (2) inches.

The outside nozzle at each end of the spray bar shall have an area of opening not less than 25 percent nor more than 75 percent, in excess of the other nozzles. All other nozzles shall have uniform openings. When the application covers less than the full width, the normal opening of the end nozzle at the junction line may remain the same as those of the interior nozzles. less than the full width, the normal opening of the end nozzle at the junction line may remain the same as those of the interior nozzles.

3.03 SPREADING LIMEROCK

- A. Method of Spreading -The limerock shall be spread uniformly with equipment as specified in 3.02 A. above. All segregated areas of fine or coarse rock shall be removed and replaced with properly graded rock.

- B. Number of Courses -When the specified compacted thickness of the base is greater than six inches, the base shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

3.04 COMPACTING AND FINISHING BASE

- A. Single-Course Base -For single-course base, after the spreading is completed the entire surface shall be scarified and then shaped so as to produce the required grade and cross section after compaction.
- B. Double-Course Base -For double-course base, the first course shall be cleaned of foreign material and bladed and brought to a surface cross section approximately parallel to that of the finished base. Prior to the spreading of any material for the upper course, the density tests for the lower course shall be made and the Engineer shall have determined that the required compaction has been obtained. After the spreading of the material for the final course is completed, its surface shall be finished and shaped so as to produce the required grade and cross section after compaction, and free of scabs and laminations.
- C. Moisture Content -When the material does not have the proper moisture content to insure the required density, wetting or drying will be required. When water is added it shall be uniformly mixed-in by disking to the full depth of the course which is being compacted. Wetting or drying operations shall involve manipulation, as a unit, of the entire width and depth of the course which is being compacted.
- D. Density Requirements -As soon as proper conditions of moisture are attained the material shall be compacted to a density of not less than 98 percent of maximum density as determined by AASHTO T 180. The minimum density which will be acceptable at any location outside the traveled roadway (such as intersections, crossovers, turnouts, etc) shall be 98 percent of such maximum. Limerock base for shoulder pavement shall be compacted to a density not less than 95 percent of the maximum density as determined under AASHTO T 180.
- E. Density Test -At least three density determinations shall be made on each day's final compaction operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the Engineer.

During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density tests on the finished base.

F. Correction of Defects

- 1 Contamination of Base Material -If, at any time, the subgrade material should become mixed with the base course material, the Contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.
- 2 Cracks and Checks -If cracks or checks appear in the base, either before or after priming, which, in the opinion of the Engineer, would impair the structural efficiency of the base, the Contractor shall remove the cracks or checks by rescarifying, reshaping, adding base material where necessary, and recompacting.

3.05 PRIMING

- A. Preparation -The prime coat shall be applied only when the base meets the specified density requirements and the moisture content in the top half of the base does not exceed 90 percent of the optimum moisture of the base material. At the time of priming, the base shall be firm, unyielding and in such condition that no undue distortion will occur.

Before any bituminous material is applied, all loose material, dust, dirt, caked clay and other foreign material which might prevent proper bond with the existing surface shall be removed for the full width of the application. Particular care shall be taken in cleaning the outer edges of the strip to be treated, to insure that the prime or tack coat will adhere.

When the prime or tack coat is applied adjacent to curb and gutter, valley gutter or any other concrete surfaces, such concrete surfaces (except where they are to be covered with a bituminous wearing course) shall be covered with heavy paper, or otherwise protected while the prime or tack coat is being applied. Any bituminous material deposited on such concrete surfaces shall be removed.

The temperature of the prime material shall be between 100 degrees Fahrenheit and 150 degrees Fahrenheit. The actual temperature shall be that which will insure uniform distribution. The material shall be applied by means of a pressure distributor. The amount to be applied will be dependent on the character of the surface and shall be sufficient to coat the surface thoroughly and uniformly, with no excess.

- B. Rate of Application -The rate of application shall be not less than 0.10 gallon per square yard, unless a lower rate is approved by the Engineer.
- C. Sprinkling -If so required by the Engineer the base shall be lightly sprinkled with water and rolled with a traffic roller, in advance of the application of the prime.
- D. Sanding -The primed base shall be covered by a light uniform application of cover material. If considered necessary for proper distribution of spread, the cover material shall be lightly dragged with a drag broom, after which it shall be rolled with a traffic roller, for at least ten passes over the entire area.
- E. Sampling Device on Transport Tanks -All transport tanks delivering bituminous materials for use on the project shall be equipped with an approved spigot-type sampling device.
- F. Temperature Sensing Device on Transport Tanks -All transport tanks delivering bituminous materials for use on the Department's projects shall be equipped with an approved dial type thermometer.
- 1 The thermometer shall have a temperature range from 50 degrees Fahrenheit to 500 degrees Fahrenheit in 25 degrees Fahrenheit increments with a minimum dial diameter of two inches.
 - 2 The thermometer shall be located near the midpoint in length and within the middle third of the height of the tank and be enclosed in a well with a protective window or by other means as necessary to keep the instrument clean and in the proper working condition.

3.06 QUALITY CONTROL

- A. Testing Surface -The finished surface of the base course shall be checked with a templet cut to the required crown and with a 15-foot straightedge laid parallel to the centerline of the road. All irregularities greater than 1/4 inch shall be corrected by scarifying and removing or adding rock as required, after which the entire area shall be recompact as specified hereinbefore. In the testing of the surface, the measurements will not be taken in small holes caused by individual pieces of rock having been pulled out by the grader.

B. Thickness Requirements

1 Measurements -Thickness of base shall be measured at intervals of not more than 200 feet. Measurements shall be taken at various points on the cross section, through holes not less than three inches in diameter.

2 Areas Requiring Correction -Where the compacted base is deficient by more than 1/2 inch from the thickness called for in the plans, the Contractor shall correct such areas by scarifying and adding rock. The base shall be scarified and rock added for a distance of 100 feet in each direction from the edge of the deficient area. The affected areas shall then be brought to the required state of compaction and to the required thickness and cross section.

3 Deficient Areas Left in Place -As an exception to the requirement for correcting areas of base which show a thickness deficiency exceeding the allowable 1/2 inch, if so approved in writing by the Engineer. Any of such areas in which the extent of the deficiency might be considered as not sufficient to seriously impair the required strength of the base may be left in place. No payment, however, will be made for such deficient areas left in place and not corrected.

3.07 MAINTENANCE

A. The Contractor will be responsible for assuring that the true crown and templet are maintained, with no rutting or other distortion, and that the base meets all the requirements, at the time the surface course is applied.

END OF SECTION

SECTION 02260

FINISH GRADING

PART 1 -GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall, under this Section, supply, place, compact and roll finish grade materials prior to landscaping work.
- B. Finish grade sub-soil.
- C. Cut out areas to receive stabilizing base course materials for paving and sidewalks.
- D. Place, finish grade and compact topsoil.

1.02 RELATED WORK

- A. Section 02211: Site Grading.
- B. Section 02225: Excavation, Backfill and Compaction.
- C. Section 02934: Sodding.

1.03 PROTECTION

- A. The Contractor shall prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, utility lines, and sprinkler system. Correct damage at no cost to the Owner.

PART 2 -PRODUCTS

2.01 MATERIALS

- A. Topsoil shall be friable loam free from subsoil, roots, grass, excessive amount of weeds, stones and foreign matter; acidity range (ph) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter. (Use topsoil stockpiled on site if conforming to these requirements, or as directed by the Engineer.)

PART 3 -EXECUTION

3.01 SUB-SOIL PREPARATION

- A. Rough grade sub-soil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc., in excess of 2 inches in size. Remove sub-soil which has been contaminated with petroleum products.

- B. Cut out areas, to sub-grade elevation, which are to receive stabilizing base for paving and sidewalks.
- C. Bring sub-soil to required levels, profiles and contours. Make changes in grade gradual. Blend slopes in to level areas.
- D. Slope grade away from building minimum 4 inches in 10 feet (unless indicated otherwise on Drawings).

3.02 PLACING TOPSOIL

- A. Place topsoil in area where seeding, sodding and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:
 - 1 6-inches for seeded areas.
 - 2 4 1/2-inches for sodded areas.
 - 3 24-inches for shrub beds.
 - 4 18-inches for flower beds.
- B. Use topsoil in relatively dry state. Place during dry weather.
- C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of sub-grades.
- D. Remove stones, roots, grass, weeds, debris and other foreign material while spreading.
- E. Manually spread topsoil around trees, plants, buildings and other structures to prevent damage which may be caused by grading equipment.
- F. Lightly compact placed topsoil.

3.03 SURPLUS MATERIAL

- A. Remove surplus sub-soil and topsoil from site.

PART 4 -LEAVE STOCKPILE AREAS AND ENTIRE JOB SITE CLEAN AND RAKED, READY TO RECEIVE LANDSCAPING.

END OF SECTION