TECHNICAL SPECIAL PROVISIONS

for

THE CITY OF FRUITLAND PARK
C.R. 466A PHASE 3B UTILITY RELOCATION

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SECTION 3000
CONTRACT ADMINISTRATION

3000-1 GENERAL

Provide all necessary surveying, testing, utility coordination, record data, shop drawings and material submittals, and warranty. Provide test results at completion of the test. Submit shop drawings and material submittals prior to placement of materials.

3000-2 STAKING/SURVEY REQUIREMENTS, BY CONTRACTOR

3000-2.1 Sanitary Sewer

Force mains shall be staked and graded at 50-feet intervals. All fittings, clean-outs and valves are to be staked and graded.

3000-2.2 Water Distribution System

The following shall be staked and graded.

A) Fire Hydrants.
B) All Fittings.
C) Blow-Offs.
D) Mains (stake at a minimum of 50-feet Intervals).
E) Valves.

3000-3 TESTING

3000-3.1 General

A) All testing except density testing shall be performed by the contractor and shall be in accordance with this Technical Special Provision.

B) The selection of the testing laboratory and the costs of the testing shall be the responsibility of the Contractor. The laboratory must be FDEP and FDOT approved. Failed tests shall be handled as described in Section 5-9 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (FY2023-24) as amended.

C) The scheduling of the test with the testing laboratory shall be the responsibility of the Contractor. Prior to any section of the work being cut over and connected to the City of Fruitland Park system, that section shall be tested and approved by the Engineer with advice from the City of Fruitland Park.

D) Water needed for flushing of lines and testing, may, at the contractor's expense, be purchased from the City of Fruitland Park. The contractor may rent a hydrant meter and pay normal City of Fruitland Park rates for water. The cost for installation and rental of the hydrant meter is $105.00. A $2,000.00 deposit will be required. The water rates include a base rate of $91.20 per month. Usage will be billed according to the City's tiered

water rate structure. The City's tiered water rate structure is available at City Hall.

3000-3.2 Sanitary Sewer Force Mains

A) The Contractor shall perform hydrostatic testing of all sanitary sewage force mains, as set forth in this Technical Special Provision, and shall conduct said test in the presence of the Engineer and the City of Fruitland Park with 48 hours advance notice provided to the Engineer.

B) Piping and appurtenances to be tested shall be within sections between valves or adequate plugs, not exceeding 2000-feet with prior approval from the Engineer. Testing shall not proceed until all joint restraining devices are installed. All piping shall be thoroughly cleaned and flushed prior to testing to clear the lines of all foreign matter. While the piping is being filled with water, care shall be exercised to permit the escape of air from extremities of the test section, with additional release cocks provided if required.

C) Hydrostatic testing shall be performed at 100-psi for all sizes of force mains. The testing procedure shall continue for an uninterrupted period of not less than two hours. Testing shall be in accordance with the applicable AWWA provisions for PVC-AWWA Publication M-23. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formulas.

$$L = \frac{SDP^{1/2}}{148{,}000} \qquad \text{20' pipe length}$$

$$L = \frac{SDP^{½}}{133{,}200} \qquad \text{18' pipe length}$$

L = allowable leakage in gallons per hour

S = length of pipe tested, in feet

D = nominal diameter of the pipe in inches

P = average test pressure maintained during the leakage test in PSIG

1) The testing procedure shall include the continued application of the specified pressure to the test system, for the two hour period by way of a pump taking supply from the container suitable for measuring water loss. The amount of loss shall be determined by measuring the volume displaced from said container.

2) Should the test fail, necessary repairs shall be accomplished by the Contractor and the test repeated until it is within the established limits. The Contractor shall furnish the necessary labor, water, pumps, gauges, and all other items required to conduct the required sanitary sewage force main testing and shall

perform the necessary system repairs required to comply with the specified hydrostatic test.

3) Pipe sections to be pressure tested shall be subjected to a hydrostatic pressure of 100-psi for a duration of two hours by means of a pump.

3000-3.3 Water Distribution Systems

A) The Contractor shall perform hydrostatic testing of all water distribution systems, as set forth in the following and shall conduct said tests in the presence of the Engineer and the City of Fruitland Park, with 48 hours advance notice provided, in writing, to the Engineer.

B) Piping and appurtenances to be tested shall be within sections between valves, not exceeding 2,000-feet unless alternate methods have received prior approval from the Engineer. Testing shall not proceed until all joint restraining devices are installed. All piping shall be thoroughly cleaned and flushed prior to testing to clear the lines of all foreign matter. While the piping is being filled with water, care shall be exercised to permit the escape of air from extremities of the test section, with additional release cocks provided if required.

1) Hydrostatic testing shall be performed at 150-psi pressure, unless otherwise approved by the Engineer, for a period of not less than two hours. Testing shall be in accordance with the applicable AWWA provisions for PVC-AWWA Publication M-23 and for DIP-AWWA Standard C600, Section 4. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formulas:

18' Pipe Length	**20' Pipe Length**
$L = \frac{SDP^{½}}{133{,}200}$	$L = \frac{SDP^{½}}{148{,}000}$

L = allowable leakage in gallons per hour

S = length of pipe tested, in feet

D = nominal diameter of the pipe in inches

P = average test pressure maintained during the leakage test in PSIG

2) The testing procedure shall include the continued application of the specified pressure to the test system, for the two hour period, by way of a pipe taking supply from the container suitable for measuring water loss. The amount of loss shall be determined by measuring the volume displaced from said container.

3) Should the test fail, necessary repairs shall be accomplished by the Contractor and the test repeated until within the established

limits. The Contractor shall furnish the necessary labor, water pumps, gauges, and all other items required to conduct the required water distribution system testing and perform necessary repairs.

4) Pipe sections to be pressure tested shall be subjected to a hydrostatic pressure of 150-psi for a duration of two hours by means of a pump.

3000-3.4 Disinfecting Water Distribution System

A) Following the pressure testing, the Contractor shall disinfect all sections of the water distribution system, and receive approval thereof from the appropriate agencies, prior to placing in service. Advance notice shall be provided to the Engineer, who will notify the City of Fruitland Park Utilities, before disinfecting procedures start. The disinfection shall be accomplished with the applicable provisions of AWWA Standard C651, "Disinfecting Water Mains" and all appropriate agency approvals. Computation of the amounts of chlorine to be used for disinfection shall be approved by the Engineer with advice from the City of Fruitland Park.

B) Care shall be taken to provide disinfection to the total system, and extremities shall be carefully flushed prior to chlorination. Water for flushing shall be provided by the Contractor. After disinfection and final flushing have been accomplished, two (2) samples of water for bacteriological analysis shall be collected and submitted as directed by the Engineer with advice from the City of Fruitland Park. These samples shall be collected at specified locations, as shown in the construction plans. Should these samples or subsequent samples prove to be unsatisfactory, then the piping shall be disinfected until sufficient number of satisfactory samples are obtained.

C) The Contractor shall furnish all temporary jumper connections equipment and materials and perform the work necessary for the disinfecting procedures, including additional disinfection as required.

3000-4 COORDINATION OF UTILITY SERVICES

3000-4.1 Location of Existing Utilities

Locations of underground utilities are shown from information received from the various utility owners and from Kimley Horn under Lake County Project ID #430253-6-54-01. The locations or elevations of utilities are not represented to be exact and are shown for the convenience of the Contractor. The Contractor shall contact the utility owner of concern for any available additional information and coordinate his construction activities accordingly. Contractor shall coordinate with existing utility owners for protection and/or support of their facilities. Any cost incurred for the protection of existing underground utilities will be considered as part of the unit price for pipe installation paid to the Contractor.

3000-4.2 Maintenance of Service

The public and private utilities including water, gas, storm drain, sewer lines, electrical conduit, power lines, telephone, cable tv, and appurtenant plant and facilities, are and must be kept in continuous operation, and all work hereunder must be so conducted as to avoid interference with or interruption in the operation of same, and shall be started and completed in the shortest practicable time, in order that these additional contemplated facilities may be available for use without delay. All work hereunder must be so conducted so as to avoid interference or interruption in travel of streets, alleys, or individual access ways. In order to secure these results, the order of procedure and methods of conducting work shall at all times be subject to the approval of the Engineer without in any way relieving the Contractor of responsibility for same.

The cost of any temporary bypasses required to maintain uninterrupted City of Fruitland Park utility service shall be included in the bid price for the City of Fruitland Park utilities. This shall include, but not be limited to, the cost of bacteriological analyses required for temporary bypasses, reimbursement to the City of Fruitland Park Utilities for actual costs of advertising, boil water notices, interruption of service notices, staff time for such, and other related work.

The Contractor shall schedule his work in such a way as to avoid creating conflicts between any existing or proposed City of Fruitland Park utilities and any other work to be performed under this Contract.

In the event that the roadway construction is in phases, all City of Fruitland Park utility work associated with that phase must be included in the Traffic Control Plan. This shall include any work that is required to be done outside of the phase of construction which is required to be done to the City of Fruitland Park utility in order to maintain uninterrupted utility service.

All existing utilities which are to be removed from service shall be physically removed from the project site. No utility removed from service shall remain in place.

3000-4.3 Protection and Support of Utilities

The Contractor shall be responsible for protecting, maintaining and supporting all existing and proposed City of Fruitland Park utilities during the course of executing the work under this Contract. This shall include protecting, maintaining and supporting all existing and proposed utilities before, during and after work is completed in the vicinity of any City of Fruitland Park utilities. No additional compensation for this work is to be provided. Contractor shall include these costs in the unit prices of the utilities.

In the event that the Contractor should damage a City of Fruitland Park utility line, the Contractor shall be responsible for repairing the damage at no additional cost to the City of Fruitland Park. Said repair work shall be completed within the following time frames: Water Line, two hours from time of damage, Gravity Sewer Line, 2 hours from time of damage, Sanitary Force Main, 1 hour from time of damage. Should the Contractor not complete the repairs in the time allotted above, the City of Fruitland Park shall make the repair to the utility in order to restore utility service. However, the Contractor shall reimburse the City of

Fruitland Park for said repairs at a rate of $100/hour/employee, plus material costs. Any related expenses such as rental of equipment, hauling of sewage, bacteriological sampling, disinfection, or other related work, shall also be reimbursable at the cost to the City of Fruitland Park.

3000-5 AUTHORITY AND DUTIES OF INSPECTOR

3000-5.1 General

Inspectors employed by the City of Fruitland Park, under the direction of the City's Public Works Director, shall be authorized to inspect all work done and all materials furnished. Such inspection may extend to any or all parts of the work and to the preparation, fabrication or manufacture of the materials to be used.

3000-6 RECORD DATA AND AS-BUILTS

3000-6.1 General

The Contractor shall maintain during the progress of the project accurate records of the location, length and elevation of all pipe and piping installed. Prior to final acceptance and after the connection of any portion of the work to the City of Fruitland Park system, the Contractor shall deliver to the Engineer, who will forward to the City, certified as-built drawings in a reproducible 11" x 17" PDF format with accurate notations recorded thereon.

3000-6.2 Requirements

As-Built drawings showing the elevations and horizontal alignment of all newly installed lines at 50-foot stations and at every fitting and every change in alignment to ensure compliance with these plans. The location and elevation of manholes, valves, tees, crosses, and bends shall be dimensioned to the station and offset. Information to be shown for sanitary sewer wyes shall include the distance to the nearest manhole, length of service line, and building number served. Elevations of potable water main at crossings of sanitary hazards shall be provided for top of pipe for the lower utility and bottom of pipe for the upper utility.

3000-6.3 Submittal

As-Built Drawings shall be submitted in a reproducible 11" x 17" PDF format and shall be certified by a Professional Land Surveyor registered in the State of Florida. As-Built Drawings shall also be provided to the City of Fruitland Park via email, in ACAD (.dwg) file format.

3000-6.4 Acceptance

Portions of the project shall not be considered to be finally accepted until record drawings for that portion have been submitted and accepted by the Engineer and the City of Fruitland Park.

As-built drawings shall be submitted to the City of Fruitland Park accompanying satisfactory bacteriological sampling results and FDEP clearances prior to the monthly progress payment cutoff. Any work for which the City of Fruitland Park

has not received satisfactory bacteriological sampling results, FDEP clearances and record drawings as required in Section 3000-6 through Section 3000-6.4 of this Technical Special Provision shall not be eligible for payment until such information is provided.

3000-7 SHOP DRAWINGS AND MATERIAL SUBMITTALS

3000-7.1 General

Contractor shall submit all shop drawings and material submittals to the Engineer, who will forward to the City of Fruitland Park's designated representative.

3000-8 CONTRACTOR WARRANTY

3000-8.1 General

In addition to any warranties implied by law and to any manufacturers' or distributors' warranties assigned to the Department, the Contractor hereby warrants that the materials and installation of materials shall conform to all samples and shop drawings provided and shall be free from defects in materials and workmanship for a period of one (1) year following the date of final acceptance.

This warranty shall apply to each component of any assembly and to any assembly as a whole. In the event a defect, malfunction, or other failure not caused by misuse or third-party acts not contemplated occurs during the warranty period, the Contractor shall repair the warranted item if repair can be make on site within a reasonable time from receipt of notice of the occurrence. If repair cannot be made within a reasonable time from receipt of notice of the occurrence the Contractor shall replace the warranted item onsite within a reasonable time from receipt of notice of the occurrence. In determining a reasonable time for repair or replacement, matters unique to the Contractor, such as office location or availability of personnel, shall not be considered. In the event that the Department determines that public health, safety, or welfare requires temporary measures to continue safe functioning of the facility of which the warranted item is a part, the Contractor shall provide temporary items or take other temporary measures as the Department deems necessary. All repairs, replacements, and temporary measures shall be at the sole cost and expense of the Contractor, without any charge to the Department. If the Contractor fails to comply with the Contractor's obligation under this warranty, the contractor shall be liable to the Department for all damages associated with the contractor's breach hereof and damages associated with the initial occurrence from the date of the occurrence. Damages shall include, but shall not necessarily be limited to, costs incurred in repairing or replacing warranted items, as well as incidental and consequential damages suffered by the Department.

Prior to final acceptance and payment for the Utility Relocation work, Contractor shall provide to the City of Fruitland Park a Maintenance Bond with a total value of 10% of the Utility Relocation work performed under the Contract. The Bond shall be valid for one year, coincident with the Warranty. The Bond shall be payable to the City of Fruitland Park. In the event that work to be performed under the above stated warranty is required, the City of Fruitland Park will

request such work in writing. The Contractor shall then be required to mobilize to the site within 14 calendar days, and have the warranty work completed within 30 calendar days. Should the Contractor not respond as required above, the City of Fruitland Park shall complete the repairs and bill the Contractor for the work completed at an hourly rate of $100.00, plus materials. Payment from the Contractor for any warranty work completed by the Contractor shall be reimbursed to the City of Fruitland Park within 30 days. Should reimbursement for such work not be received within 30 days, the City of Fruitland Park shall begin the process to recoup the monies by calling the Contractors Maintenance Bond.

SECTION 3100
UTILITY EXCAVATION, TRENCHING AND BACKFILLING

3100-1 GENERAL

Construct proper trench, prepare utility pipe bedding and backfill of the new water and sewer utility pipe.

3100-2 WORKMANSHIP

3100-2.1 Utility Bedding

A) Class B (Minimum Utility Bedding): The bottom of the trench shall be shaped to provide a firm bedding for the pipe. The pipe shall be firmly bedded in undisturbed soil, or hand shaped so that the pipe will be in continuous contact therewith for its full length.

B) Class A (Special Utility Bedding): Should special bedding be required due to depth of cover, impact loadings, or other conditions, bedding methods shall receive prior approval by the Engineer.

3100-2.2 Dewatering

Utilities shall be laid “in the dry” unless otherwise approved by the Engineer. Dewatering systems shall be utilized in accordance with good standard practice and must be efficient enough to lower the water level in advance of the excavation and maintain it continuously to keep the trench bottom and sides firm and dry.

3100-2.3 Roadway and Pavement Restoration

Pavement or roadway surfaces cut or damaged shall be replaced by the Contractor in accordance with the Contract Documents.

3100-2.4 Protection and Restoration Property

During the course of construction, the Contractor shall take special care and provide adequate protection in order to minimize damage to vegetation, surfaced areas, utilities, and structures within the construction right-of-way, easement or site, and take full responsibility for repair thereof.

SECTION 3200
PIPE, FITTINGS, VALVES AND APPURTENANCES

3200-1 GENERAL

Construction of water and sewer utility utilizing the material and installation standards for pipe, fittings, valves and appurtenances specified in this Technical Special Provision. Required specialty items not included under this Section shall be high quality and consistent with approved standards of the industry for the applicable service installation. All material to be furnished by the Contractor with exception of meters and meter couplings.

3200-2 PIPE AND FITTINGS

3200-2.1 General

All pipe and fittings shall be clearly marked with the name or trademark of the manufacturer, pressure rating, thickness or pressure class, and the nominal pipe diameter. All pipe and fittings shall be adequate for 150-psi working pressure and shall meet all applicable AWWA specifications. All pipe installations shall have indicator tape run directly on top of pipe to indicate the purpose of piping (water, sewer, force main) and copper tracing wire, located within 1-inch of the top of pipe, for location purposes. Tracing Wire shall be eight gauge, single strand, UF rated (direct burial), copper wire.

3200-2.2 Cast and Ductile Iron

A) Pipe

Ductile iron pipe shall be in accordance with ANSI/AWWA C151/A21.51. Pipe shall be laid in accordance with ANSI/AWWA C150/A21.50. Ductile Iron pipe shall be Pressure Class 350.

B) Fittings

Cast and ductile iron pipe fittings shall conform to ANSI/AWWA C110/A21.10 and ANSI/AWWA C153/A21.53 and shall have a minimum working pressure of 250-psi. Fittings shall be UL/FM approved and shall be compact fittings. All underground fittings shall be mechanical joint.

C) Joints

1) Mechanical Joints

All jointing materials for mechanical joints shall be provided by the pipe or fitting manufacturer. Material assembly and bolting shall be in accordance with ANSI Specification A21.11 (AWWA C111). All glands shall be made of ductile iron only. Mechanical joint gaskets in sewage lines shall be of a composition suitable for exposure to sewage, sludge, or scum within the pipe.

2) Push-On joints shall be in accordance with ANSI A21.11/AWWA C111. All jointing materials shall be provided by the pipe or fitting manufacturer and installation shall be in accordance with the manufacturer's recommended practice.

3) Restrained joint assemblies with mechanical joint pipe shall be Mechanical Joint Retainer Glands, "locked-type" joints of Megalug or approved equal. The restrainer shall meet or exceed all the requirements of ANSI A21.11/AWWA C111 and ASTM A536. The restrainer system shall provide anchoring of the pipe to mechanical joint fittings or bell to spigot pipe joints. Restraints shall provide a full 360-degree contact with sufficient gripping action to secure the clamp to the pipe and be designed so that restraint action is increased as a result of increases in line pressure.

4) Flanged connections shall be in accordance with ANSI A21.15/AWWA C115, 56.7 kg standard.

5) No leaded joints or connection of any kind will be permitted.

D) Coatings and Linings

1) Cast and ductile iron pipe and fittings for force mains or when used as gravity sewer service shall receive an interior coal tar epoxy lining for both pipe and fittings in accordance with AWWA C210.

2) Cast and ductile iron pipe and fittings for water service shall be cement mortar lined in accordance with ANSI A21.4/AWWA C104.

3) Cast and ductile iron pipe and fittings for water and sewer shall receive an exterior bituminous coating approximately 1 mil thick as specified in ANSI A21.51. The finished coating shall be continuously smooth, neither brittle when cold nor sticky when exposed to sunlight and be strongly adherent to the fitting. The coating shall be applied to the exterior of all pipe and fittings unless otherwise specified. All bolts, nuts, studs and other uncoated parts of joints for underground installation shall be coated with asphalt or coal-tar prior to backfilling. Coatings shall be applied in accordance with AWWA C110-fittings, AWWA C115-flanged pipe, and AWWA C151-ductile iron pipe.

4) Special Exterior Protection for Corrosion

Extra protection shall be provided for underground cast or ductile iron pipe and fittings within areas of severe corrosive conditions. This shall be accomplished by the installation of polyethylene encasement, through the area of concern. The soil test evaluation to determine the necessity for extra protection in suspect areas shall be set forth in ANSI Standard A21.5. Additionally, where other existing utilities are known to be cathodically protected at cast or ductile iron pipe crossing, said utility shall be installed parallel to and within 10-feet of the crossing, protection shall also be provided. Steel pipe shall not be installed in severe corrosion areas.

3200-2.3 Polyvinyl Chloride (PVC)

A) Pipe

Pipe shall be manufactured from clean virgin Type 1, Grade 1 rigid, unplasticized polyvinyl chloride resin (Class 12454-A or Class 12454-B) conforming to ASTM D1784. The PVC compound shall have an established hydrostatic design basis (HDB) of 4000-psi as described in ASTM D2837. The pipe shall bear the National Sanitation Foundation (NSF) seal for potable water pipe.

1) Pipe with diameters of 3-inches or less shall be PVC1120 Schedule 80 and shall be in accordance with ASTM D1784 and D1785. Pipe is to be manufactured to I.P.S. (Steel) Standard Pipe equivalent outside diameters. The sustained pressure test shall be conducted in accordance with ASTM D1598 at test pressures given in ASTM D1785. The burst pressure test shall be conducted in accordance with ASTM D1599 at test pressures given in ASTM D1785. Potable water pipe shall be marked NSF-PW approved.

2) Pipe with diameters of 4-inches to 12-inches for water mains shall be PVC 1120, Class 150, DR 18 and shall be manufactured in accordance with AWWA Standard C900, latest revision. All pipe shall be hydrostatically proof tested at the factory in conformance with UNI-B-11 standards. In case of conflict between standards specified herein, the requirements of AWWA Standard C900 shall prevail. Pipe is to be manufactured to ductile iron pipe equivalent outside diameters. The pipe shall be designed to pass without failure a sustained pressure test of 500 psi in conformance with ASTM D1598 and a quick burst test of 755 psi in conformance with ASTM D1599. Pipe larger than 12” shall be in accordance with AWWA C-905, DR 25.

3) Pipe with diameters of 4-inches to 12-inches for sewer force mains shall be PVC 1120, Class 150, DR 18, and shall be manufactured in accordance with AWWA Specification C900 latest revision.

4) PVC Pipe colors shall be as follows:

WATER – Blue or White
SEWER - Green or White with Yellow stripes (Force Main)

B) Joints and Fittings

Connections and fittings for pipe 2-inches and smaller shall be Schedule 80 and shall have solvent welded sleeve type joint in accordance with ASTM D2672. The solvent cement shall comply with ASTM D2564, and the joint shall be made in accordance with ASTM D2855.

Fittings for pressure mains 3-inches and larger (water lines or sewage force mains) shall be cast iron or ductile iron with mechanical joint rubber compression ring type joints as described in Section 3200-2.2 B of this Technical Special Provision.

Joints for pressure mains 3-inches and larger (water lines or sewage force mains) shall be the manufacturer's standard push-on bell type with rubber sealing ring in accordance with ASTM D3139. Elastomeric gaskets shall conform to ASTM F477.

3200-2.4 Special Items

A) Tapping Saddles shall be of two types:

1) Stainless steel full circle sleeves as manufactured by Ro-Mac type SST, assuring a full circumferential seal. Sleeves shall be rated for 150-psi operating and 200-psi minimum test pressure and shall be all 304 stainless steel.

2) Mechanical Joint type with outlet, flange ANSI B16.11 125lb. standard. Mueller 1#615 or #715, assuring a full circumferential seal. Sleeves shall be rated for 200 psi minimum and shall conform to ASTM A126. The mechanical joint shall conform to Section 3200-2.2 (C). The sleeve shall be lined and coated in accordance with Section 3200-2.2 (D).

B) Service Saddles

Shall be as manufactured by Ford, or Mueller. Units for cast or ductile iron and PVC pipe shall be double strap. Sealing gasket shall be BUNA-N rubber, and straps shall be stainless steel.

C) Water Service

Polyethylene plastic pipe or tubing for potable water service shall comply with AWWA C800 and AWWA C901, be approved for potable service by the National Sanitation Foundation, and bear the NSF seal. The product shall be rated for a minimum working pressure of 200-psi with a minimum Standard Dimension Ratio (SDR) of 9. Service lines shall be 1-inch for single and 1 ½-inches with 1-inch branch off for double service. All fittings shall be Mueller or Ford brass. Curb stops and corporate stops to be Mueller or Ford. Curb stops shall have padlock wings. Brass service materials shall be manufactured by Ford.

D) Pipe Couplings

The Contractor shall furnish and install pipe couplings as required to complete the work. Pipe couplings used to join two pieces of ductile iron pipe or PVC pipe shall be sized to match the outside diameter of the pipeline. Transition couplings shall be used to join pipes of different outside diameters. The coupling sleeve shall be manufactured of ductile iron conforming to ASTM A536 and be coated with 14 mils of epoxy. The bolts shall be manufactured of a metal of high corrosion resistance and shall conform to ANSI 21.11/AWWA C111. Gaskets shall be wedge-type and manufactured of virgin SBR for water and sewer service. The installation of all couplings shall be in accordance with the manufacturer's recommendations. After installation, all coupling surfaces including bolts and nuts, shall be coated with an approved coating as specified in this section of this Technical Special Provision. Couplers and adapters for polyethylene pipe shall be brass conforming to AWWA C800 and shall be female IPT, pack joint, or compression nut.

3200-3 VALVES

3200-3.1 General

The valve type, size, rating, flow direction arrow if applicable, and manufacturer shall be clearly marked on each unit. Valves shall open left (counterclockwise) with an arrow cast in the metal of operation hand wheels and nuts indicating the direction of opening. Gate valves shall be Mueller, AVK, or Clow.

3200-3.2 Valves for Underground Water Service

A) Valves from 2-inches thru 12-inches for underground water service shall be iron body gate valves, non-rising stem type and shall be equipped with a 2-inch square cast iron operating nut with corrosion protection coating inside and out. Gate Valves shall be resilient seated valves which meet all C509 requirements of AWWA (water).

B) Valves larger than 12" shall be cast iron body, self-lubricated, rubber seated, one-piece stainless steel shaft, and capable of drip-tight shut-off at the rated prressure and meet AWWA C504. Valve operators shall conform to AWWA C504. Valve operator for buried or submerged installations shall be furnished with sealed enclosures. Valves shall be equipped with actuating nuts, cast iron handwheels or chain operator as appropriate for the installation and type of operator. Valves shall be installed in a vertical position. Valves and appurtenances shall be Dezurik Series 130, American-Darling 150 or Pratt.

3200-3.3 Valves for Underground Sewer Service

Valves for wastewater application shall be cast iron body, full port, non-lubricated, eccentric type, with resilient faced plugs, and capable of drip-tight shut-off at the rated pressure if applied at either port in accordance with AWWA C606. Operation of all valves 8" or larger, and smaller sizes in exposed locations which require handwheels or chainwheels, shall be by approved gear actuators, equipped with position indicator and stop, and shall be furnished by the valve manufacturer. Gear actuators for buried or submerged installations shall be furnished with sealed enclosures. Valves shall be equipped with actuating nuts, cast iron handwheels or chain operators, with galvanized steel chains, as appropriate for the installation and type of operator. Valves and appurtenances shall be Series 100, as manufactured by DeZurik Corp. or Clow.

3200-3.4 Sewage Combination Air Valve (SCAV)

A) Design

Single body, double orifice to allow large volumes of air to escape or enter pipe.

B) Materials

1) Body and Cover: ASTM 126 GRB Cast Iron
2) Float and Stem: ASTM A-240 Stainless Steel
3) Needle and Seat: Buna-N Nitrile Rubber
4) Plug: ASTM B-124 Bronze

5) Leverage frame: Delrin or Cast Iron ASTM D-1233

C) Isolation Valve

Cast iron plug valve or resilient seated gate valve.

D) Accessories

Blow-off valve and back flushing capabilities.

E) Manufacturer

Val-Matic Series 800 or approved equal by city utilities, appropriately sized for intended service or as indicated on the Drawings.

F) SCAV shall be installed in a concrete vault as shown on the plans.

3200-3.5 Valves Smaller than 2-inches

Valves smaller than 2-inches shall be bronze body gate valve conforming to Federal specifications 150-psi minimum working pressure with threaded joint equal to American 3 FG or Red and White 280 and Kitz Gate Valve. The use of this type of valve shall be approved by the Engineer with advice from City of Fruitland Park.

3200-3.6 Valve Boxes

The Contractor shall furnish and install a valve box for each buried valve. Boxes shall be adjustable, cast iron, minimum interior diameter of 5-inches, with covers cast with the applicable inscription in legible lettering on the top; “SEWER” or “WATER”. Boxes shall be suitable for the applicable surface loading and valve size. Valve boxes not in the pavement shall have concrete pads around their tops, which will be flush with the top of the curb, with minimum dimensions of 24-inches x 24-inches x 6-inches and rebar as per plans.

3200-3.7 Fire Hydrants

Fire hydrants shall be of Mueller Super Centurion 200 oil reservoir, American Darling 6-inches B-84-B, 5 1/4-inches Clow Medallion UL/FM, or M&H fire rated.

Hydrants shall comply with AWWA Standard C502, “Fire Hydrants for Ordinary Water Works Service”, and shall be equipped with a minimum of one pumper outlet nozzle 4 ½-inches in diameter and two hose nozzles 2 ½-inches in diameter. Units shall be traffic type with breakable safety clips or flange, and stem with safety coupling located below barrel break line to preclude valve opening. Hydrants shall be dry top type. Outlet nozzles shall be on the same plane, with minimum distances of 18-inches from center of nozzles to ground line. Valve shall be compression type with 5-1/4-inches minimum opening unless otherwise requested and show inlet connection to be 6-inches minimum.

3200-4 INSTALLATION

3200-4.1 General Requirements

A) Piping, fittings, valves and appurtenances shall be constructed in accordance with the City of Fruitland Park Land Development Code.

B) Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe, scratching or marring machined surfaces, and abrasion of the pipe coating.

C) Unless specifically designated on the plans, or so ordered by the Engineer, the pipe shall be buried to a depth to obtain at least 36" cover.

D) Piping shall be installed along straight line and grade between fittings, manholes, or other defined points, unless definite lines of alignment, deflection or grade change have been established. The Contractor shall investigate well in advance of pipe laying any conflicts which may require readjustments in planned locations and advise the Engineer of the results of these investigations so that the Engineer may give instructions as to the modifications required. Modification to approved alignment or grade during construction shall receive prior approval from the Engineer with advice from City of Fruitland Park and all resulting design considerations shall be resolved by the Engineer.

E) Care must be taken to fit the joints together properly so that the centers of the pipes shall be in a straight line. All adjustments to line and grade must be made by scraping away or filling in under the barrel of the pipe and not by wedging or blocking up any portion of the pipe. In no case shall the pipe be walked on either before or after the joints have been made. Any pipe that has its grade alignment or joints disturbed will be taken up and re-laid. Pipe shall not be driven to grade by striking it with any unyielding object. Each section of pipe shall rest upon a pipe bed for the full length of its barrel, with recesses excavated to accommodate bells and joints. Any section of pipe already laid which is found to be defective or damaged shall be replaced with new pipe.

F) Before and during installation, materials shall be cleaned and maintained clean, with all coatings protected from damage. The interior of the pipe shall be free of dirt and debris, and when work is not in progress, all open ends shall be plugged. Any sand or foreign material that enters the pipe shall be removed from the pipe immediately. No pipe shall be installed when trench conditions (standing water, excess mud, etc.) or the weather (rain, etc.) is unsuitable for such work, except by approval of the Engineer.

G) Pipe, valves, fittings, or other items shall be inspected prior to installation, and any items showing a fracture or other defect shall be rejected. However, cast or ductile iron pipe showing an end crack, with no fracture indicated beyond the visible, may be salvaged by cutting off the damaged section 12-inches from the visible limits of the crack, provided the remaining pipe is sound. Any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no fracture can be seen, shall be marked as rejected and removed at once from the work.

H) Immediately after the pipe has been jointed and inspected, backfilling shall be placed to a minimum of 12-inches above the crown of the pipe to adequately protect the pipe from injury and movement, in accordance with ASTM D2321. Before and during the backfilling of any trench, precaution should be taken against flotation of pipe lines therein due to entry of large quantities of water into the trench which could cause uplift of the pipe line. The diameter deflection of PVC pipe shall not exceed five percent after completion and approval of construction, and through out the one year warranty period.

I) Jointing shall be by an approved method and shall not require undue force to accomplish full satisfactory seating and assembly. Connections at structures shall be cut accurately and worked into place without being forced and shall align with the connecting point.

J) All non-flanged fittings and valves shall be restrained using suitable tie rods and clamps, or restrained joint assemblies to support the fitting properly shall be provided. When tie-rods and/or clamps are used, they shall receive two heavy coats of bituminous paint to minimize corrosion.

K) Water shall not be allowed in the trenches while the pipes are laid. The use of a well point dewatering system is a requirement on any runs of PVC pipe where such pipe will be below the groundwater elevation at the specific site. Sump and pump type trenching may be used only on short shallow runs where wellpoints would be impractical and excessively expensive. In all cases, density testing up to a point at least 25-mm (1-inch) above the water table shall be completed prior to removal of dewatering equipment. On sewer lines installed using wellpoints, service laterals shall be installed while the wellpoints are in operation

L) Polyvinyl Chloride (PVC) pipe-lubrication and/or solvent for pipe and fitting joints shall be non-toxic (NSF approved for potable water). Following making, solvent type joints shall not be disturbed for five minutes and shall not have internal pressure applied for 24 hours or as recommended by the pipe manufacturer.

M) All piping (PVC, Polyethylene tubing) shall have a type TWH insulated PVC copper conductor, #14 solid strand wire that strap and run with the pipe**.**

SECTION 3300
SANITARY SEWAGE FORCE MAIN

3300-1 GENERAL

The provisions contained in this section include general requirements for the installation of sanitary sewer force main systems serving sanitary sewage pumping stations.

3300-2 STANDARD REQUIREMENTS

3300-2.1 General

The materials of construction and general installation procedures shall comply with the specific applicable standards set forth under Section 3100 “Utility Excavation, Trenching and Backfilling” and Section 3200, “Pipe, Fittings, Valves and Appurtenances” of this Technical Special Provision.

3300-2.2 Pipe Depth and Protection

A) Pipe Depth and Protection

The standard minimum cover for sewage force main systems shall be 3-feet from the top of the pipe to finish grade. Where this condition cannot be met, special consideration will be given.

B) Pipe Bedding

Special care shall be exercised to provide adequate bedding for the type of pipe used, taking into consideration trench width and depth, superimposed loadings above grade and the material below trench grade.

3300-2.3 Identification and Location

In order to preclude possible domestic water tapping, all installed underground sanitary sewage force mains shall be marked with a continuous green stripe located within the top 90 degrees of the pipe.

3300-2.4 System Connections

All connections and ties to the City of Fruitland Park’s sewer system will be performed by the Contractor under the supervision of the Engineer and the City of Fruitland Park.

3300-2.5 Sanitary Sewer Force Main or Removal

A) Removal of Pipelines

When called for on the contract drawings, removal of existing pipelines shall mean complete removal of the existing pipeline and disposal of the pipe and appurtenances (valves, fittings, thrust blocks, etc.) not indicated to be salvaged. Backfill and compaction shall conform to standards set forth in the specifications. The Contractor is responsible for pumping out and flushing the gravity sewer

lines prior to placing them out of service. The Contractor must utilize a registered company / facility to dispose of the collected wastewater per FDEP Regulations.

SECTION 3400
WATER DISTRIBUTION SYSTEM

3400-1 GENERAL

The provisions contained in this section include general requirements for the installation of water distribution systems for potable water service.

3400-2 STANDARD REQUIREMENTS

3400-2.1 General

The materials of construction and general installation procedures, shall comply with the specific applicable standards set forth under Section 3100, “Utility Excavation, “Trenching and Backfilling” and Section 3200, “Pipe, Fittings, Valves and Appurtenances” of this Technical Special Provision.

3400-2.2 Fire Hydrants

Hydrants shall be installed plumb and in true alignment with the connection pipes to the water main. They shall be securely braced against the end of the trench (undisturbed soil) with mechanical joint restraints. The gravel or crushed stone for the drain sump, followed by backfilling, shall be carefully placed and compacted. Installed hydrants shall be painted red for the final coat per NFPA 291, Chapter 3.

3400-2.3 Pipe Depth and Protection

The standard minimum cover for water distribution systems shall be 3 feet from the top of the pipe to finish grade, or as shown in .

3400-2.4 System Connections

All connections and ties to the City of Fruitland Park’s water system and transfer of services will be performed by the Contractor under supervision of the Engineer and the City of Fruitland Park. Connections and tie-ins shall be coordinated with the City of Fruitland Park and the Engineer, and no disruptions to service shall be allowed between the hours of 7 am and 10 pm. All connections and tie-ins that shall cause interruptions to service shall be noticed to all affected customers by the Contractor no less than 48 hours prior to said interruption.

A) Water Service Connections

Connections to water mains 4 inches and larger shall be made by drilling the appropriate size hole and installation of service saddles, with services to smaller size mains accomplished by in-line fittings. Water service connections shall be installed per details in the plans. On curbed streets the exact location for each installed service shall be marked by etching or cutting a “W” in the concrete curb and painted blue with aerosol marking paint. Where no curb exists, locations shall be adequately marked by a blue stake or other method approved by the Engineer with advice from the City of Fruitland Park.

The Contractor shall be responsible for reconnection of any water meters, backflow prevention devices, backflow prevention device testing, etc., which is required as a part of the work in an area where an existing water line is being removed and replaced with a new water line.

B) Water Main Connections

All connections to existing mains will be made using couplings described in Section 3200, “Pipe, Fittings, Valves, and Appurtenances”.

3400-2.5 Water Main Installation & Removal

A) Installation

When called for on the contract drawings, proposed pipelines shall be installed as shown. Backfill and compaction shall confirm to the standards set forth in the specifications.

B) Removal

When called for on the contract drawings, removal of existing pipelines shall mean complete removal of the existing pipeline and disposal of the pipe and appurtenances (valves, fittings, etc.) not indicated to be salvaged. Backfill and compaction shall conform to standards set forth in the specifications.

SECTION 3500
METHOD OF MEASUREMENT

3500-1 CONTRACT ADMINISTATION

3500-1.1 Staking/Survey Requirements:

Payment for survey control, staking and grading of water main, force main, valves, fittings, fire hydrants, and structures is included in quantities associated with pipes, valves, and appurtenances.

3500-1.2 Testing:

Payment for all testing is included in quantities associated with pipes, valves, and appurtenances.

3500-1.3 Coordination of Utilities:

Payment for coordination with utility owners is included in quantities associated with pipes, valves, and appurtenances.

3500-1.4 Record Data and As-builts:

Payment for maintaining accurate records of utility installation and certified as-built drawings is included in quantities associated with pipes, valves, and appurtenances.

3500-2 UTILITY EXCAVATION, TRENCHING, AND BACKFILLING

3500-2.1 Utility Trenching, Bedding, and Backfilling:

Utility trenching, bedding and backfilling for installation of new water and sewer utility lines, valves and appurtenances is included in quantities associated with pipes, valves, and appurtenances.

3500-2.2 Roadway and Pavement Restoration:

Repair of pavement or roadway surfaces resulting from the installation of water and sewer utilities is already being repaired or replaced due to roadway work under roadway Project ID #430253-6-54-01. All roadway and pavement surfaces being removed, damaged or cut is in association with the roadway project and is not included quantities for this utility project.

3500-3 PIPES, FITTINGS, VALVES, AND APPURTENANCES

3500-3.1 Delivery of Salvageable Material to City of Fruitland Park:

The delivery of salvaged valves and fire hydrant assemblies to the City of Fruitland Park Public Works yard will be paid as Lump Sum (LS).

3500-3.2 Utility Pipe, Water/Sewer:

The quantity to be paid for will be the length, in feet, to the nearest foot,

furnished, placed, tested, and accepted. Measurement shall be made along the horizontal projection of the centerline of pipe. For pipe up to 7.9" in diameter, payment includes all fittings. For pipes 8" and larger in diameter, fittings will be paid separately. Work includes all pipe restraining devices as detailed on plans, labor, materials, and incidentals.

3500-3.3 Utility Pipe, Remove & Dispose:

Excavation or trenching for the removal of a water or sewer utility is incidental to construction of the storm sewer system associated with Roadway Project ID #430253-6-54-01. No additional payment for excavation to remove designated water or sewer utility. The quantity to be paid for will be the length, in feet, to the nearest foot, of utility pipe removed and disposed. Measurement shall be made along the horizontal projection of the centerline of pipe. For all pipe sizes, payment includes removal and disposal of all valves, fittings, and appurtenances not specified to be salvaged.

3500-3.4 Fittings:

The quantity to be paid for will be the actual number of fittings furnished and installed, measured as "each", for pipes 8" and larger in diameter. For fittings on pipes up to 7.9" in diameter, fittings are included in the pipe cost. Work includes all labor, material, and incidentals.

3500-3.5 Utility Structure:

The quantity to be paid for will be the actual number of structures furnished and installed, measured as "each". The concrete vault or utility structure includes all appurtenances as detailed on the plans. Work includes all labor, materials, and incidentals.

3500-3.6 Tapping Saddle/Sleeve:

The quantity to be paid for will be the actual number of tapping saddles furnished and installed, measured as "each". Tapping saddles include poly tubing, corporation stops, curb stops, labor, materials, and incidentals.

3500-3.7 Backflow Assembly:

The quantity to be paid for will be the actual number of backflow assemblies/temporary jumper connections furnished, installed and removed, upon completion and acceptance of a water utility segment, measured as "each". Work includes all labor, materials, and incidentals.

3500-3.8 Valves:

The quantity to be paid for will be the actual number of valves, valve boxes, and concrete valve collars, furnished and installed, measured as "each". Work includes all labor, materials, and incidentals.

3500-3.9 VAC/AIR Assembly:

The quantity to be paid for will be the actual number of VAC/AIR assemblies

furnished, and installed, measured as “each”. The VAC/AIR assembly includes all appurtenances as detailed on the plans. Work includes all labor, material, and incidentals.

3500-3.10 Relocate Utility Fixture:

The quantity paid for will be the actual number of water meters and meter boxes relocated, measured as “each”. Relocation of each water meter and meter box includes careful removal from conflict location, placed at the plan specified location, per plan detail, and connection to the new service line. Work includes all labor, material, and incidentals.

3500-3.11 Adjust and Modify Utility Fixture:

The quantity paid for will be the actual number of water and sewer valve boxes adjusted or modified to new finished grades, measured as “each”. Each valve box requiring adjustment or modification will comply with plan detail for installation of new box. Work includes all labor, materials, and incidentals.

3500-3.12 Remove and Dispose Utility Fixtures:

The quantity paid for will be the actual number of water valves and boxes removed for 8” and larger pipe diameter, measured as “each”. This is for removal of valves and boxes only, contractor is to salvage and deliver water valves and boxes to City of Fruitland Park as described in Section 3500-3.1, Delivery of Salvageable Material.

3500-3.13 Fire Hydrant Assemblies:

The quantity to be paid for will be the actual number of fire hydrant assemblies furnished, installed and accepted, measured as “each”. A fire hydrant assembly includes all fittings and appurtenances as detailed on the plans. Work includes all labor, materials, and incidentals.

3500-3.14 Fire Hydrant, Salvage and Store:

The quantity to be paid for will be the actual number of fire hydrant assemblies removed and stored, measured as “each”. Contractor is to exercise care as not to damage each fire hydrant assembly during removal and storage. Delivery of salvaged fire hydrant assemblies to the City of Fruitland Park will be as described in Section 3500-3.1, Delivery of Salvageable Material. Work includes all labor and incidentals.

3500-3.15 Fire Hydrant, Adjust and Modify:

The quantity to be paid for will be the actual number of fire hydrants adjusted to grade, measured as “each”. Contractor is to adjust fire hydrant and valve box to grade as detailed on plans for new hydrant installation. Work includes all labor, materials, and incidentals.

SECTION 3600
BASIS OF PAYMENT

3600-1 CONTRACT ADMINISTATION

Staking/survey requirements, testing, coordination of utilities, record data, as-builts and contractor warranty will not be paid for separately. The contractor shall include the cost for all Contract Administration items in the Contract unit price for pipes, valves, fittings and appurtenances.

3600-2 UTILITY EXCAVATION, TRENCHING, AND BACKFILLING

3600-2.1 Utility Trenching, Bedding, and Backfilling:

The contractor shall include the cost of utility trenching, bedding and backfilling in the Contract unit price for pipes, valves, fittings and appurtenances.

3600-3 PIPES, FITTINGS, VALVES, AND APPURTENANCES

3600-3.1 Delivery of Salvageable Material to City of Fruitland Park:

Price and payment will be full compensation at the Contract unit price for all work to deliver salvaged valves, valve boxes and fire hydrant assemblies to the City of Fruitland Park Public Works yard and off load in location designated by the City.

3600-3.2 Utility Pipe, Water/Sewer:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation of water and sewer pipe in an acceptable manner. The cost of the pipe will also include all survey, testing, utility coordination, record data, as-builts, warranty, trenching, bedding, backfilling, dewatering, compaction, borrow, pipe restraints and includes all labor materials and incidentals. For 7.9” diameter pipe and smaller, the cost of pipe will also include all fittings.

3600-3.3 Utility Pipe, Remove & Dispose:

Excavation or trenching for the removal of a water or sewer utility is incidental to construction of the storm sewer system associated with Roadway Project ID #430253-6-54-01. No payment will be made for excavation to remove designated water or sewer utility. Price and payment will be full compensation at the Contract unit price for all work to remove and dispose of utility pipe, fittings, and appurtenances.

3600-3.4 Fittings:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation of 8” and larger utility fittings in an acceptable manner. The cost of the fittings will also include all survey, testing, utility coordination, record data, as-builts, warranty, trenching, bedding, restraints, backfilling, compaction, borrow, and includes all labor materials and incidentals.

3600-3.5 Utility Structure:

Price and payment will be full compensation at the Contract unit price for all work and materials including concrete, steel, reinforcement, hardware, inserts and other materials as required to fabricate, transport and place the product into its permanent position in an acceptable manner. The cost of concrete vault or utility structure includes all appurtenances as detailed on the plans, survey, testing, record data, as-builts, warranty, excavation, bedding, dewatering, backfill, compaction, borrow, labor, materials and incidentals.

3600-3.6 Tapping Saddle/Sleeve:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation of tapping saddle/sleeve in an acceptable manner. The cost of each tapping saddle/sleeve will also include poly tubing, corporation stops, curb stops, survey, testing, record data, as-builts, warranty, excavation, bedding, dewatering, backfill, compaction, borrow, labor, materials, and incidentals.

3600-3.7 Backflow Assembly:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation and removal of backflow assembly/temporary jumper connections furnished, installed and removed in an acceptable manner.

3600-3.8 Valves:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation of water and sewer valves in an acceptable manner. The cost of the valves will also include all survey, testing, record data, as-builts, excavation, restraints, warranty, bedding, backfilling, compaction, borrow, labor, materials, and incidentals.

3600-3.9 VAC/AIR Assembly:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation of VAC/AIR Assembly in an acceptable manner. The cost of AIR/VAC assembly includes all appurtenances as detailed on the plans, survey, testing, record data, as-builts, warranty, bedding, restraints, backfill, compaction, borrow, labor, materials and incidentals.

3600-3.10 Relocate Utility Fixture:

Price and payment will be full compensation at the Contract unit price for all work and materials required to relocate water meters and meter in an acceptable manner. The cost to relocate includes removal from conflict location, placement at the plan specified location, installation per plan detail, and connection to the new service line from main and service line to customer and includes survey, testing, record data, as-builts, warranty, bedding, restraints, backfill, compaction, borrow, labor, material, and incidentals.

3600-3.11 Adjust and Modify Utility Fixture:

Price and payment will be full compensation at the Contract unit price for all work and materials required to adjust valve boxes or utility fixtures in an acceptable manner. The cost to adjust or modify a utility fixture includes adjustment to new finished grades, bedding, backfill, compaction, borrow, labor, materials, and incidentals.

3600-3.12 Remove and Dispose Utility Fixtures:

Price and payment will be full compensation at the Contract unit price for all work to remove utility fixtures, associated with pipe sizes 8" and larger, in an acceptable manner. The cost for this section is for removal of valves and boxes only, contractor is to salvage and deliver water valves and boxes to City of Fruitland Park as paid for in Section 3600-3.1, Delivery of Salvageable Material.

3600-3.13 Fire Hydrant Assemblies:

Price and payment will be full compensation at the Contract unit price for all work and materials required to complete installation of fire hydrant assemblies in an acceptable manner. The cost for each fire hydrant assembly includes all fittings and appurtenances as detailed on the plans, survey, testing, record data, as-builts, warranty, bedding, restraints, backfill, compaction, labor, materials, and incidentals.

3600-3.14 Fire Hydrant, Salvage and Store:

Price and payment will be full compensation at the Contract unit price for all work required for removal of a fire hydrant assembly in an acceptable manner. The cost for removal includes labor, backfill, compaction, removal and storage. Delivery of salvaged fire hydrant assemblies to the City of Fruitland Park will be paid for as described in Section 3600-3.1, Delivery of Salvageable Material.

3600-3.15 Fire Hydrant, Adjust and Modify:

Price and payment will be full compensation at the Contract unit price for all work and materials required to adjust fire hydrants and valve boxes to new finished grades in an acceptable manner. The cost to adjust or modify a fire hydrant and valve box includes adjustment to new finished grades, survey, testing, record data, as-builts, warranty, bedding, restraints, compaction, borrow, labor, materials, and incidentals.