

1.0 GENERAL

1.1 Scope of Work

The work required under this contract includes furnishing all materials, tools, equipment, transportation, services, labor and superintendence necessary for the construction and completion of this project.

Any part or item of the Work which is reasonably implied or normally required to make the installation satisfactorily operable shall be performed by the Contractor and the expense thereof shall be included in the applicable unit prices or lump sum prices bid for the Work. It is the intent of these Specifications to provide the Owner with the complete system. All miscellaneous appurtenances and other items of Work that are incidental to meeting the intent of the Specifications shall be considered as having been included in the applicable unit prices or lump sum prices bid for the Work even though these appurtenances and items may not be specifically called for in the Bid Documents.

1.2 Easements and Rights of Way

Contractor shall confine his construction operations within the limits indicated on the Drawings, and shall use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies so as to cause the least possible damage to property and interference with traffic. If the Contractor requires additional easement for his operations, the Contractor is solely responsible for acquisition and maintenance of the easement. No additional compensation will be provided by the Owner.

2.0 MATERIALS

Not used.

3.0 EXECUTION

3.1 Special Instructions to Contractor

A. General Instructions

1. Contractor shall verify dimensions and locations of existing items shown on Plans.
2. Before the Contractor starts work in the area, the Contractor shall visit the project site with the Engineer to determine any discrepancies in plans and specifications, and determine responsibility for correction at that time.
3. Deviation from plans or specifications during construction shall in all cases be as approved in writing by the Engineer.
4. Contractor shall provide all material, containers, etc., required for items that require testing, such as cylinders for concrete strength testing.
5. No blasting will be permitted on this project.
6. Open burning within the City limits will not be allowed.
7. No portion of the Work shall be constructed under conditions which adversely affect the quality or efficiency thereof, unless special means or precautions are taken by Contractor to perform the Work in a proper and satisfactory manner.
8. Storage areas for new materials and disposal sites for spoils shall be approved by the Engineer.
9. All items not bid as a separate item shall be subsidiary to bid items (i.e. removal of existing asphalt pavement and existing multiple pipe culvert shall be subsidiary to Preparing Right-of-

Way).

B. Special Water and Wastewater Instructions

1. Generally, water and wastewater service shall not be interrupted between the hours of 5:30 P.M. and 9:00 A.M.

Existing water and wastewater facilities shall be kept in continuous operation throughout the construction period. No interruption will be permitted which adversely affects the degree of service provided. Provided permission is obtained from Owner in advance, portions of the existing facilities may be taken out of service for short periods corresponding with periods of minimum service demands.

Contractor shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period.

2. Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities including structures, drain lines, and utilities. In each case, Contractor shall receive permission from Owner or the owning utility prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaken the connection. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

3. In order to minimize environmental and potential flood impacts, the sum of the amount of trench opened in advance of the completed line and the amount of trench left unfilled at any time shall be restricted to one full block or 100 linear feet, whichever is less.
4. Restoration shall be an on-going process during construction operations and shall immediately precede completion of construction of each successive section of the line, which shall not exceed 1,200 linear feet without approval of the Engineer or Owner.

C. Special Roadway Construction Instructions

1. Driveways

Unless otherwise indicated, the approach grade of existing driveways shall be modified as indicated and as directed by the Owner's Representative. The Owner will contact property owners whose driveways require grade modification beyond street right-of-way and the Owner will obtain their concurrence for approach grade modification. Within the right-of-way, all driveways shall be replaced with concrete driveways. Outside the right-of-way, when approach grade modifications are required, flexible base shall be placed by the Contractor to resurface existing dirt or gravel driveways; asphalt and concrete drives shall be replaced in kind by the Contractor. Excavation, flexible base, portland cement concrete, and asphaltic concrete used for driveways as prescribed above shall not be measured for payment but shall be considered subsidiary to various Bid items in the Contract unless payment is included as a separate Contract pay item.

END

Division 1 Section 01010
CONSTRUCTION SEQUENCE REQUIREMENTS

1.0 GENERAL

1.1 General

- A. The construction of this project will occur while the distribution systems is operating to meet specific, critical drinking water requirements. The conveyance and operations necessary to meet these requirements are of higher priority than construction activities. Schedules of connections, renovations and modifications shall be submitted to the OWNER for approval, and all such items shall be coordinated throughout the entire construction period. These schedules shall permit full and normal conveyance of potable water.
- B. The CONTRACTOR shall prepare and submit a project schedule within 2 weeks prior to beginning work, outlining the schedule and time requirements for each item involving the existing conveyance system.
- C. The CONTRACTOR shall notify the OWNER at least 3 weeks in advance and again 48 hours prior to beginning work on a particular area, and coordinate with the OWNER the specific items to be isolated and duration for each. Obtain written approval from the OWNER prior to shutdown of portions of the distribution system. High flow conditions may require the rescheduling of an approved shutdown. Any cost associated with rescheduling will be included in the Contractor's bid.
- D. The CONTRACTOR shall not operate any of the OWNER's valves or equipment unless directed to do so in writing by the OWNER.
- E. Prior to beginning work in each particular area that requires a shutdown, the CONTRACTOR shall have on-site all materials, equipment, and personnel necessary to complete the work in the time scheduled. The CONTRACTOR shall also perform all possible tasks to the most complete state possible prior to shutdowns. All exposed bolts and nuts on valves or fittings that are to be disassembled shall be removed and replaced one at a time prior to shutdown to assure as timely progress as possible.
- F. Failure of the CONTRACTOR to properly plan and perform the work in the prescribed manner may result in distribution system operating conditions that violate TCEQ rules. In this case, the CONTRACTOR may be liable for payment of fines, fees or other charges imposed upon the OWNER by state or federal regulatory agencies, and all other costs associated with the low-pressure conditions.
- G. The CONTRACTOR shall be required to maintain the streets utilized in his construction in a reasonably clean condition. Weekly street cleaning and scraping will be required as directed by the OWNER.
- H. Streets shall not be utilized for storage of materials. Locations for stockpiles of excavated materials, pipe bedding, and embedment materials shall be identified and coordinated with the OWNER. Gutters and drainage areas shall be kept clear of construction materials at all times.
- I. Street and lane closures in the vicinity of and necessary for construction shall be coordinated with the OWNER. Traffic control shall be installed according to the plans. The period of time streets are closed shall be limited to the minimum time reasonably possible.

1.2 Overall Project Construction Sequence Requirements

- A. The CONTRACTOR shall coordinate and schedule each task necessary to complete all work within the time allowed for the project. Coordination and time limitations for individual facilities are described in following paragraphs. These phases are general in nature and not intended to

prescribe the CONTRACTOR's Work Plan. Work items from various phases may be done simultaneously or separately.

- B. Each phase may require the CONTRACTOR to perform work such as installing temporary or permanent plugs and/or diversion facilities in structures that are online. The specifics related to flow diversion and temporary plugging means and methods are the responsibility of the CONTRACTOR; however, the CONTRACTOR's plans and schedules shall be submitted to the OWNER for review.
- C. Facility piping interconnections are required. Pipe testing for the pipes to be connected shall be completed to the extent possible and test reports furnished to the ENGINEER prior to making connections. All potable water piping shall be cleaned, disinfected, and tested prior to placing into service. CONTRACTOR shall provide taps, flushing, and blowoff connections to flush and disinfect each pipe section.

2.0 MATERIALS

Not used.

3.0 EXECUTION

Not used.

END

Division 1 Section 01050
GRADES, LINES, AND LEVELS

1.0 GENERAL

Not used.

2.0 MATERIALS

Not used.

3.0 EXECUTION

- 3.1 Contractor shall perform all layout work to transfer all controls for grades, lines, levels and measurements from reference points provided by Owner's Representative. All survey Work will be performed under supervision of a Texas Registered Professional Land Surveyor.
- 3.2 Owner will not stake for construction and will not be on Site, except to perform quality control checks.
- 3.3 Contractor shall be required to set elevation hubs (blue tops) for subgrade and base course on centerline, at quarter points and curb lines or edge of pavement at intervals not exceeding 50 feet.
- 3.4 Upon request, Owner's Representative will provide horizontal and vertical controls. In addition, on building projects, a boundary survey will be supplied together with a legal description of the property and all easements where Work will take place.
- 3.5 Contractor shall submit construction staking layout sheets certified by a Professional Engineer or Registered Professional Land Surveyor (as evidenced by their seal) registered in the State of Texas. Contractor shall use a qualification based selection process consistent with the Professional Services Procurement Act, Chapter 2254 of the Texas Government Code, when securing the services of a Professional Engineer or Registered Professional Land Surveyor. It is a violation of State Law to solicit Bids for the services of a Professional Engineer or Registered Professional Land Surveyor.
- A. All Work shall be done to the lines, grades and elevations indicated on the drawings. Information concerning basic horizontal and vertical control points will be provided by the Engineer. These points shall be used as datum under this Contract. All work to transfer all controls for grades, lines, levels, layout and measurements shall be performed under the supervision of a Texas Registered Professional Land Surveyor, provided by the CONTRACTOR, and such work shall conform to the standards for construction staking in the most recent edition of the Texas Society of Professional Surveyors Manual of Practice for Land Surveying, Category 5, Section 1-12 inclusive. The centerline and offset centerline stakes will be set at no greater than fifty (50) foot intervals on both sides of the right-of-way for roadway projects, and at points of alignment or grade changes for pipeline projects. References to lines and grades as established by the Contractor's surveyor shall be in reference to these stake lines.
- B. Contractor shall place grade stakes and submit construction staking layout sheets. Contractor shall allow a minimum of ten (10) days after submission to the Owner's Representative for review of construction staking layout sheets. Construction staking layout sheets shall be in the format included at the end of this section. No Work shall be performed without Owner's Representative review and return to Contractor of construction staking layout sheets.
- C. Prior to any excavation, Contractor shall establish the elevation to top of ground at centerline of the pipe as well as cuts and offset stakes at the distance deemed appropriate by Contractor to preclude disturbance of offset stakes during construction. Contractor shall set all blue tops for subgrade and base courses on centerline at quarter points, at curb lines or edge of pavement, and other points that may be indicated on the Drawings, all at intervals not to exceed 50 feet. In addition, the Contractor shall furnish, without charge, competent persons and such tools, stakes, and other materials as the

Owner's Representative may require in establishing or designating control points, or in checking survey, layout, and measurement work performed by Contractor.

- D. Contractor shall keep the Owner's Representative informed, a reasonable time in advance of the times and places at which he wishes to do Work, so that any checking deemed necessary by Owner may be done with minimum inconvenience to the Engineer and minimum delay to Contractor. Surveying will be coordinated between the Owner's Representative and Contractor in a manner convenient to both.
- E. During layout, Contractor shall verify elevation and alignment of tie-in to existing infrastructure. Any Work done without being properly located may be ordered removed and replaced at the Contractor's expense.
- F. Contractor shall carefully preserve all monuments, benchmarks, reference points, and stakes. In case of the destruction thereof, Contractor shall bear the cost of replacement and shall be responsible for any mistake or loss of time that may be caused. Permanent monuments or benchmarks, which must be removed or disturbed, shall be protected until properly referenced for relocation. Contractor shall furnish materials and assistance for the proper replacement of such monuments or benchmarks.
- G. Contractor shall satisfy himself before commencing Work as to the meaning and correctness of all control stakes, marks, etc., and no claim will be entertained by Owner for or on account of any alleged inaccuracies, unless Contractor notifies Owner in writing before commencing the affected Work.

END

(See attached "Construction Staking Layout Sheet")

1.0 GENERAL

1.1. Summary

This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

- A. Security plan.
- B. Contractor's construction schedule.
- C. Submittal schedule.
- D. Shop drawings.
- E. Product data.
- F. Samples.
- G. Quality assurance and quality control submittals, including calculations, mix designs and substantiating test results.

2.0 MATERIALS

See approved standard products list on the webpage.

<http://www.ci.san-marcos.tx.us/index.aspx?page=353>

3.0 EXECUTION

3.1 Submittal Procedures

Contractor shall be responsible for the following:

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals or resubmittals concurrently.
 - a) The Engineer/Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - 3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a) Allow fourteen (14) calendar days for initial review. Allow additional time if the Engineer must delay processing to permit coordination with subsequent submittals.
 - b) If an intermediate submittal is necessary, process the same as the initial submittal.
 - c) Allow fourteen (14) calendar days for processing each resubmittal.
 - d) No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the Work to permit processing.

- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4 inches by 5 inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a) Project name.
 - b) Date.
 - c) Name and address of the Contractor's Engineer.
 - d) Name and address of the Contractor.
 - e) Name and address of the subcontractor.
 - f) Name and address of the supplier.
 - g) Name of the manufacturer.
 - h) Number and title of appropriate Specification Section.
 - i) Drawing number and detail references, as appropriate.
- A. Submittal Transmittal: Transmit each submittal from the Contractor to the Engineer through the Owner's Representative using a transmittal form.
1. On the transmittal form, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
 2. Number transmittals in sequence for each Series of the Specifications thus: x-xxx. The number after the dash indicates the Section of the Specifications, and the number before the dash is the sequence number of the transmittal. For example, the first item submitted related to Specification Item No. 506, "Manholes" would be labeled 1-506, the second item submitted would be labeled 2-506, etc. Identify resubmits; with a letter of the alphabet following the original sequence number, using "A" for the first resubmittal, "B" for the second resubmittal, etc. For example, the first resubmittal of the second item submitted for Specification 506 would be labeled 2A-506.

3.2 Submittal Schedule

- A. Concurrently with the development of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the initial Submittal Schedule along with the Construction Schedule, at, or prior to, the Pre-construction Conference.
1. Coordinate Submittal Schedule with the Contractor's Construction Schedule.
 2. Prepare the schedule in chronological order. Provide the following information, as applicable.
 - a) Scheduled date for the first submittal.
 - b) Related Section number or Specification number.
 - c) Submittal category (Shop Drawings, Product Data, Calculations, Test Results, or Samples).
 - d) Name of the subcontractor.

- e) Description of the part of the Work covered.
- f) Scheduled date for resubmittal.
- g) Scheduled date for completion of the Engineer's review.

- B. Distribution: Following Owner's response to the initial submittal, print and distribute copies to the Owner's Representative, Engineer, Owner, subcontractors, suppliers, and other parties required to comply with submittal dates indicated. Keep copies at the Project Site at all times.
 - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

3.4 Construction Sequence Plans

The Contractor is required to submit construction sequence plans to the City at, or prior to, the pre-construction conference for approval. The Project shall be divided into phases according to the sequence of construction given in the Drawings and traffic control plans. The Contractor shall arrange his/her work schedule to complete all Work on each phase, including street repair, any valve casting or manhole adjustments, and street overlay before moving on to the next work area.

3.5 Shop Drawings

- A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 - 1. Dimensions.
 - 2. Identification of products and materials included by sheet and detail number.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
 - 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 inches by 11 inches but no larger than 24 inches by 36 inches.
 - 7. Do not use Shop Drawings without an appropriate stamp indicating action taken.

3.6 Product Data

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, applicable certifications and performance curves.
 - 1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a) Manufacturer's printed recommendations.
 - b) Compliance with trade association standards.

- c) Compliance with recognized testing agency standards.
 - d) Application of testing agency labels and seals.
 - e) Notation of dimensions verified by field measurement.
 - f) Notation of coordination requirements.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a) Do not proceed with installation until a copy of the final submission of Product Data is in the Installer's possession.
 - b) Do not permit use of unmarked copies of Product Data in connection with construction.

3.7 Samples

- A. Submit full-size, fully fabricated Samples cured and finished when specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 1. Mount or display Samples in the manner to facilitate review of qualities indicated. Include the following:
 - a) Specification Section number and reference.
 - b) Generic description of the Sample.
 - c) Sample source.
 - d) Product name or name of the manufacturer.
 - e) Compliance with recognized standards.
 - f) Availability and delivery time.
 2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a) Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.
 - b) Refer to other Specification Sections for requirements of Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - c) Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
 - d) Samples not incorporated into the Work, or otherwise designated as the Owner's

property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
 - a) Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b) Sample sets may be used by Owner for final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

3.8 Quality Assurance and Quality Control Submittals

- A. Submit quality assurance and quality control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, materials test results, field testing and inspection reports, and other quality-control submittals as required under other Sections of the Specifications.
- B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a certification from the manufacturer or responsible Engineer certifying compliance with specified requirements.
 1. Signature: Certification shall be signed by an officer of the corporation or other individual authorized to sign documents on behalf of the company.
- C. Calculations: When required in the technical specification, calculations shall be prepared and stamped by a Professional Engineer registered in the State of Texas.
- D. Concrete, Controlled Low Strength Material, Asphalt Stabilized Base and Hot Mix Asphaltic Concrete Mix Designs and Substantiating Test Data: Requirements for submittal of mix designs and substantiating test data are specified in the applicable Technical Specification Section. Each separate batch plant supplying ASB, HMAC and/or concrete shall submit mix designs to the Owner's Representative for review.

3.9 Technical Submittals Required

- A. Technical submittals required include, but are not limited to, the following list. This list is provided as an aid to the Contractor, but is not intended to be all-inclusive. The Contractor shall refer to the Technical Specifications for additional requirements.

<u>Specification</u>	Type of Submittal
130S – Borrow	Material Data
206S – Asphalt Stabilized Base	Material Data
210S – Flexible Base	Material Data, Test Results
301 - Asphalts, Oils, and Emulsions	Product Data
302S – Aggregates for Surface Treatments	Material Data
313 - Rubber Asphalt Crack and Joint Sealer	Product Data
316S – Polymerized Asphalt Interlayer Seal	Product Data, Material Data
340 - Hot Mix Asphaltic Concrete	Material Data, Mix Designs, Test Results
360 – Concrete Pavement	Material Data, Mix Designs, Test Results
402S – Controlled Low Strength Material	Material Data, Mix Designs

403 – Concrete for Structures	Material Data, Mix Designs, Test Results
405 – Concrete Admixtures	Product Data
408 – Concrete Joint Materials	Product Data
409 – Membrane Curing	Product Data
503S – Frames, Grates, Rings and Covers	Product Data
504S – Adjusting Structures	Material Data
506S – Manholes	Material Data, Product Data
508S – Miscellaneous Structures and Appurtenances	Material Data, Product Data
509S – Trench Safety Systems	Sealed Trench Safety Systems Plan, Calculations
510 - Pipe	Material Data, Product Data
511S – Valves	Product Data
610S – Preservation of Trees and Other Vegetation	Product Data
801S – Construction Detour	Product Data
843S – Ducts	Product Data
863S – Reflectorized Pavement Markers	Product Data
867S - Epoxy Adhesives	Product Data

3.10 Engineer’s Action

- A. Except for submittals, for the record, or for information where action and return is not required, the Engineer will review each submittal, mark to indicate action taken, and return within the time frame specified in Paragraph 3.1.A.3.
 - 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Engineer will stamp each submittal with a uniform, action stamp. The Engineer will mark the stamp appropriately to indicate the action taken, as follows:
 - 1. “Reviewed”: the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 - 2. "Reviewed with Comments": the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 - 3. "Revise and Resubmit” or “Rejected”: do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations and resubmit without delay. Repeat if necessary to obtain different action mark.
 - a) Do not use, or allow others to use, submittals marked "Revise and Resubmit" or “Rejected” at the Project Site or elsewhere where Work is in progress.
 - 4. Other Action: Where a submittal is for information, or for record purposes, or for special processing, or for other activity, the Engineer will return the submittal marked “Record Copy”, “Action Not Required” or “No Action Taken."
- C. Unsolicited Submittals: The Engineer will return unsolicited submittals to the sender without action.

3.11 PREPARATION AND SUBMITTAL OF CONSTRUCTION RECORD DRAWINGS

The Owner’s Representative and the Contractor’s Superintendent will each maintain a set of Drawings noting any changes in ink during construction of the Project. The following is a recommended minimum of items to be noted:

- A. General
 - 1. Notes should be sufficiently clear to allow a draftsman to easily make the necessary

changes without the need for field checks and interpretation.

2. In accordance with the General Conditions of the Contract, one complete set of Construction Record Drawings will be submitted prior to the final pay request and forwarded to the Owner.

B. Street Reconstruction and Overlay Projects

1. Location, type, and quantity of all work added or deleted from the Project including repair areas, milled areas, sidewalk, ramps, curb and gutter, etc.
2. Deviations in street, sidewalk, curb and gutter location and grades from Drawings.

C. Water and Wastewater Projects

1. Type, name and model numbers of all valves (with # of turns to open/close), air release valves, drain and fire hydrants noted at locations installed.
2. Installed locations of all assignments, appurtenances and elevations which differ from those indicated on the Drawings.
3. Pipe manufacturer type and classification noted in sufficient detail to determine location and extent of each type or classification installed.
4. Modification to any standard or special details noted.
5. Location and description of pipe closures.
6. Restrained pipe lengths, approximate dimensions and quantities noted.
7. Location, type, and quantity of all addition and deletions.
8. Changes in grade.

The above list is not intended to be complete. Any information noted which could be used for future maintenance, location and construction projects is encouraged to be noted on the Drawings.

END

1.0 GENERAL

Tests and inspections shall be conducted as stipulated in the General Conditions of the Contract.

1.1 References

- A. ASTM D3740 – Practice for evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- B. ASTM E329 – Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

1.2 Application for Payment

- A. Owner will employ and pay for services of an independent testing laboratory to perform inspection and testing identified in individual Specification sections.
- B. Employment of testing laboratory shall not relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.
- C. Contractor shall schedule and monitor testing as required to provide timely results and to avoid delay to the Work.

1.3 Laboratory Results

The Owner will receive 3 copies, the Engineer will receive 1 copy and the Contractor will receive 2 copies of the laboratory reports from the testing laboratory. One of the Contractor's copies shall remain at the site field office (if applicable) for the duration of the project. Test results which indicate non-conformance shall be transmitted immediately via fax from the testing laboratory to the Contractor and Owner.

1.4 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.

1.5 Contractor Responsibilities

- A. Notify Owner, Engineer, and Laboratory 72-hours prior to expected time for operations requiring inspection and testing services. Notify Engineer if specifications section requires the presence of the Engineer.
- B. Cooperate with laboratory personnel in collecting samples to be tested or collected on site.
- C. Provide access to the Work and to manufacturers' facilities.
- D. Provide samples to laboratory in advance of their intended use to allow thorough examination and testing.
- E. Provide incidental labor and facilities for access to the Work to be tested; to obtain and handle samples at the site or at the source of products to be tested; and to facilitate tests and inspections including storage and curing of test samples.
- F. Arrange with laboratory and pay for additional sampling and tests requested by Contractor beyond specified requirements.

2.0 MATERIALS

Not Used.

3.0 EXECUTION

3.1 Conducting Testing

- A. Laboratory sampling and testing shall conform to ASTM D3740 and ASTM E329, plus other test standards specified in individual Specification sections.

END

1.0 GENERAL

1.1 Office at Work Site

During the performance of this Contract, if the Contractor maintains a suitable office at or near the site of the Work, it shall be considered the headquarters of his superintendent. Any communication given to the superintendent or delivered to the Contractor's office at the site of the Work in his absence shall be deemed to have been delivered to the Contractor.

1.2 Water for Construction

All water required for and in connection with the Work to be performed shall be furnished through meters installed on hydrants. It shall be paid for as set forth in the General Conditions of the Contract. Water and meters will be available from the Owner at standard rates. All costs for obtaining a water meter shall be the responsibility of the Contractor. The Contractor shall contact the Water and Wastewater Utility and arrange to install the meter. The Water and Wastewater Utility shall install a double-check valve assembly on the fire hydrant between the hydrant and the meter, to prevent backflow in the event of pressure failure. The Contractor shall supply all necessary tools, hose and pipe, and shall make necessary arrangements for securing and transporting such water and shall take water in such a manner, and at such times, that will not produce a harmful drain or decrease of pressure in the Owner's water system. It shall be the Contractor's responsibility to make arrangements with the Water and Wastewater Utility for the metering and reporting of the amount of water used. Water shall not be used in a wasteful manner. Standard hydrant wrenches shall be used for opening and closing of fire hydrants. In no case shall pipe wrenches be used for this purpose. Temporary lines shall be removed when no longer required. During periods of water restriction as defined in the San Marcos City Code, Part II, Chapter 86 Utilities, Article 2 Water, Division 2 Conservation, reclaimed water must be used instead of metered potable water on all City owned property. Reclaimed water is available at the San Marcos Wastewater Treatment Plant located at 720 River Road. The Contractor shall contact the Water and Wastewater Utility for City notification and to receive a map delineating the route within the plant that is to be used for refilling vehicles. Acquisition and delivery of reclaimed water is the Contractor's responsibility and at their expense. Use of reclaimed water must comply with Authorization No. R10273-002 titled Authorization For Reclaimed Water that can be obtained after notification is made with the Water and Wastewater Utility.

1.3 Sanitary Facilities

The Contractor shall enforce strict observance of sanitary and health regulations by his employees on the project site. The Contractor shall furnish chemical toilets for the needs of all construction workers and others performing Work or furnishing services on the Project. At least one toilet shall be furnished for each 10 employees. The facilities shall be obscured from public view to the greatest practical extent. The chemical toilets and their maintenance shall meet the requirements of the Texas Department of Health and OSHA. Facilities or maintenance methods failing to meet these requirements shall be corrected immediately. Contractor's and his subcontractor's personnel will not be permitted to use the Owner's toilet facilities, break rooms etc.

The Contractor shall also provide adequate drinking water facilities.

1.4 Telephone Services

The Contractor shall make all necessary arrangements and pay all installation charges for telephone lines in his offices at the site and shall provide all telephone instruments.

1.5 Security

The Contractor shall be responsible for protection of the site, and all Work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

No claim shall be made against the Owner by reason of any act of an employee or trespasser, and the Contractor shall make good all damage to the Owner's property resulting from the Contractor's failure to provide security measures as specified.

Security measures shall be at least equal to those usually provided by the Owner to protect existing facilities during normal operations, and shall also include such additional security fencing, barricades, lighting, and other measures as required to protect the site. When required, the Contractor shall provide a security plan to the Owner for review as to appropriateness of the security measures proposed.

1.6 Protection of Public and Private Property

The Contractor shall protect, shore, brace, support and maintain all underground pipes conduits, drains, and other underground construction uncovered or otherwise affected by the Contractor's operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all sod and shrubs in yards, parkways, and medians, shall be restored to their original condition, whether within or outside the easement/right-of-way. All replacements shall be made with new materials.

The Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by transporting equipment, materials, or men to or from the Work, whether by him or his Subcontractors. The Contractor shall make satisfactory and acceptable arrangements with the owner of, or the agency having jurisdiction over, the damaged property concerning its repair or replacement or payment of costs incurred in connection with the damage.

1.7 Fences

All existing fences affected by the Work shall be maintained by the CONTRACTOR until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the owner of the fence, and the period the fence may be left relocated or dismantled has been agreed upon. Where fences must be maintained across any construction easement, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use.

Upon completion of the Work across any tract of land, CONTRACTOR shall restore all fences to preconstruction, or to a better, condition and to their preconstruction location.

1.8 Mail Boxes

The Contractor shall remove, reset temporarily, and relocate permanently all mail boxes that are within construction site limits conforming to requirements of United States Postal Service. Mailboxes shall not be laid on the ground, but shall be temporarily reset the same day as removed. Payment for removing and resetting of mail boxes will not be paid for directly, but will be considered subsidiary to the various Bid items. Any damage to mail boxes or posts shall be the responsibility of the Contractor.

1.9 Tree and Plant Protection

All trees and other vegetation which must be removed to perform the Work shall be removed and disposed of by the Contractor; however, no trees or cultured plants shall be unnecessarily removed unless their removal is indicated on the Drawings. All trees and plants not removed shall be protected against injury from construction operations.

No tree shall be removed outside of permanent easement(s), except where authorized by the E/A.

Whenever practicable, the Contractor shall tunnel beneath trees in yards and parking lots when on or near the line of trenching operations. Hand excavations shall be employed as necessary to prevent injury to trees. Care shall be taken with exposed roots, unearthed during construction, so that roots do not dehydrate causing tree damage.

Trees considered by the Owner and Engineer to have any significant effect on construction operations are indicated on the Drawings and those which are to be preserved are so indicated.

The Contractor shall take extra measures to protect trees designated to be preserved, using methods shown on the Drawings and as specified in Standard Specification Item No. 610S "Preservation of Trees and other Vegetation."

1.10 Emergency Facilities

Free access shall be maintained at all times to fire lanes and emergency and utility control facilities such as fire hydrants, fire alarm boxes, police call boxes, and utility valves, manholes, junction boxes, etc. In the event that it is necessary to make one of these facilities temporarily inaccessible, the Contractor shall obtain approval of such action, and schedule, of Work from the Owner. The Contractor shall also provide at least 24 hours prior notice to the Fire Department, Police Department, and City Department governing the affected utility. The same Department(s) shall be promptly notified by the Contractor when such facilities are placed back in unobstructed service.

1.11 Parking

The Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing Work or furnishing services in connection with the Project, as required, to avoid any need for parking personal vehicles where they may interfere with public traffic, the Owner's operations, or construction activities.

1.12 Noise

The Contractor shall comply with the City of San Marcos's Noise Ordinances. The Contractor shall take reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound level in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the Work.

1.13 Pollution Control

The Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and the substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain or watercourse. No sediment, debris or other substance will be permitted to enter sanitary sewers and reasonable measures shall be taken by the Contractor to prevent such materials from entering any drain or watercourse.

The Contractor shall observe the rules and regulations of the State of Texas and agencies of the U.S. Government prohibiting the pollution of any lake, stream, river, or wetland by the dumping of any refuse, rubbish, dredge material, or debris therein.

The Contractor is specifically cautioned that disposal of materials into any water of the State must conform to the requirements of the Texas Commission for Environmental Quality (TCEQ), and any applicable permit from the U.S. Army Corps of Engineers.

1.14 Traffic Control

Traffic interruptions will be coordinated with the City of San Marcos Public Works Department, Police Department, and Fire Department at least 24 hours in advance of such interruptions. A street cut permit application will be required for all excavations of street pavements located within the City right-of-way. The permit application must be submitted at least 48 hours, but no more than 30 days,

prior to the start of work. The City's website (www.ci.san-marcos.tx.us) can be accessed for instructions on the street cut application. A temporary street closure permit must also be acquired for any construction-related street closure. This form can be obtained from the Engineering Department. Additional traffic controls, or modifications of controls, may be required by the Owner during any phase of construction.

The Contractor shall conduct his Work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways, and walks whether public or private, the Contractor shall provide and maintain suitable safe bridges, detours or other temporary measures to accommodate public and private travel, and shall provide reasonable notice to owners of private drives before interfering with them. Such maintenance of traffic will not be required when the Contractor has obtained written permission from the owner and the tenant of the private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point. A copy of the initial written permission shall be provided to the Owner's Representative.

Safety and conveyance of traffic shall be regarded as prime importance. Unless otherwise directed, all portions of streets associated with this Project shall be kept open and provided a dust free, smooth and comfortable ride to traffic. It shall be the responsibility of the Contractor to ensure that two-way traffic may safely bypass the construction site and that access is provided to abutting private property. In making open cut street crossings, the Contractor shall not block more than one-half of the street at one time without approval of the Owner. Whenever possible, the Contractor shall widen the shoulder on the opposite side to facilitate traffic control. Temporary surfacing shall be provided as necessary on shoulders.

Prior to beginning Work, the Contractor shall designate, in writing, a competent person who will be responsible and available on the Project site, or in the immediate area, to ensure compliance with the traffic control plan. The Contractor shall provide documentation to demonstrate the sufficient training in Traffic Control for his competent person. Owner will designate a qualified person to observe implementation and who will have authority to assure compliance with the traffic control plan.

The Contractor shall perform the necessary cleanup and finishing immediately after all or a portion of the Work is completed. When the Work includes paving operations, the entire site shall be kept clean to facilitate placement of required traffic control devices. Temporary and permanent striping layout shall be approved by the Department of Public Works prior to placement, when included in the Work.

A. Detours

Where indicated on the traffic control plan, the Contractor shall erect and maintain detours around construction activities. Should the Contractor desire to propose a detour, not already included in the traffic control plan, it shall be his responsibility to prepare a revised traffic control plan showing the detour, and obtain approval of the revised traffic control plan from the Department of Public Works and Transportation, prior to implementation of the detour. The Department of Public Works and Transportation has final authority as to the acceptability of any proposed revisions to the traffic control plan. The Contractor shall bear all costs for revising the traffic control plan and for maintaining the proposed detour.

B. Barricades and Lights

The Contractor shall place and maintain in good condition, standard barricades at each end of the Project and at other locations where traffic is rerouted or blocked from using regular traffic lanes. Barricades and warning signs shall be in accordance with the Texas Manual on Uniform Traffic Control Devices (MUTCD). Signs, barricades, and warning devices informing the public of

construction features will be placed and maintained by the Contractor, who shall be solely responsible for their maintenance. The decision to use a particular device at a particular location as indicated in the traffic control plan or as determined by the Contractor, shall be the sole responsibility of the Contractor.

All open trenches and other excavations shall have suitable barricades, signs, and lights to provide adequate protection to the public. Obstructions, such as material piles and equipment shall be provided with similar warning signs and lights.

Material storage and conduct of the Work on, or along side, public streets and highways shall cause a minimum obstruction and inconvenience of the traveling public.

2.0 MATERIALS

Not used.

3.0 EXECUTION

Not used.

END

Division 1 Section 01730
OPERATION AND MAINTENANCE MANUALS

1.0 GENERAL

1.1 Work Included

Prepare a complete and detailed Operation and Maintenance Manual for each type and model of equipment or product furnished and/or installed under this contract.

Prepare the manuals in the form of an instruction manual for the Owner. The manual is to be suitable for use in providing operation and maintenance instruction as required.

Provide complete and detailed information specifically for the products or systems provided for this project. Include the information required to operate and maintain the product or system.

Manuals are to be in addition to any information packed with or attached to the product when delivered. This information is to be taken from the product and provided as an attachment to the manual.

2.0 MATERIALS

2.1 Print manuals on heavy, first quality paper. Paper shall be 8 ½" x 11" size. Reduce drawings and diagrams to 8 ½" x 11" paper size. When reduction is not practical, fold drawings and place each separately in a clear, super heavy weight, top loading polypropylene sheet protector designed for ring binder use. Provide a typed identification label on each sheet protector. Punch paper for standard three-ring binders.

2.2 Place manuals in D-ring presentation binders. Binders are to have clear front, back, and spine covers. Sheet lifters are to be provided. Minimum size is 2" capacity. Maximum size is 3" capacity.

2.3 Provide tab indexes for each section of the manual. Indexes are to be constructed of heavy-duty paper with a reinforced binding edge and punched with holes to fit the binders. Index is to have clear insertable tabs for a typed insert.

3.0 EXECUTION

3.1 Manual Organization and Contents

A. Provide a Table of Contents listing each section of the manual for each product or system.

Identify each product or system using the nomenclature shown in the Contract Documents.

Assign a name or number to each section in the manual.

Provide index tabs for each section in the manual. The designation on the tab is to correspond to a name or number assigned in the Table of Contents.

B. Include only the information that pertains to the product described. Annotate each sheet to clearly identify the specific product or component installed, the data applicable to the installation, and delete references to inapplicable information.

C. Supplement manual information with drawings as necessary to clearly illustrate relations of each component parts of equipment and systems, and control and flow diagrams.

D. Identify each manual by placing a printed cover sheet in the front cover of the binder and as the first page in the manual. The first page is to be placed in a clear polypropylene sheet protector. The information on the first page and the cover page are to include: Name of Owner, Project Name, Volume number and Table of Contents for that volume.

E. Insert the Table of Contents into the spine of each manual.

F. Manuals for several products or systems may be provided in the same binder. Sections for each product or system must be included in the same binder. Sections must be in numerical order from

volume to volume.

- G. Correlate the data into related groups when multiple binders are used.
- H. Fill binders to only $\frac{3}{4}$ of indicated capacity to allow for addition of materials to each binder by the Owner.

3.2 Equipment and Systems Manual Content

- A. Manual shall provide a description of the unit and the component parts. Operating instructions for startup, normal operations, regulation, control, shutdown, emergency conditions, and limiting operation conditions shall be provided.
- B. Maintenance instructions including assembly, installation, alignment, adjustment, and checking instructions shall also be provided.
- C. Lubrication schedule and lubrication procedures including a cross-reference for recommended lubrication products shall be provided.
- D. A troubleshooting guide, a schedule of routine maintenance requirements and warnings for detrimental maintenance shall be provided.
- E. A description of sequence of operation by the manufacturer shall also be provided.
- F. Parts lists shall be provided including the following.
 - 1. Part numbers for ordering new parts
 - 2. Assembly illustrations showing an exploded view of the complex parts of the product
 - 3. Predicted life of parts subject to wear
 - 4. List of the Manufacturer's recommended spare parts, current prices with effective date, and number of parts recommended for storage
 - 5. Directory of a local source(s) of supply for parts with company name, address, and telephone number
 - 6. Complete nomenclature and list of commercial replacement parts
- G. Outline, cross section and assembly drawings, engineering data, test data, and performance curves.
- H. Control schematics and point to point wiring diagrams prepared for field installation, including circuit directories of panel boards and terminal strips.
- I. List of identification nameplates installed on equipment and valve identification including a list of equipment serial numbers.
- J. Other information as may be required by the individual technical sections of the specifications.

3.3 Electrical and Electronic Systems Manuals

Manuals shall provide the following information.

- A. A description of the systems and component parts.
- B. Control schematics and point to point wiring diagrams prepared for field installation. Include circuit directories of panel boards and terminal strips and as-installed color-coded wiring diagrams.
- C. Operating procedures, maintenance procedures, and the manufacturer's printed operating and maintenance instructions.

- D. List of the manufacturer's recommended spare parts, current prices with effective date, and number of parts recommended for storage.
- E. Other information as may be required by the individual technical sections of the specifications.

3.4 Architectural Products Manual

- A. Manual shall provide information required for ordering replacement parts and instructions for care and maintenance.
- B. A list of the manufacturer's recommended lubricants, recommendations for types of cleaning agents and methods, cautions against cleaning agents and methods, and a recommended cleaning schedule shall be provided.
- C. Final balancing reports for mechanical systems shall be provided.

END

Division 1 Section 01999
MODIFICATIONS TO STANDARD SPECIFICATIONS

1.0 GENERAL

The most current editions of the City of San Marcos *Standard Specifications*, the Texas Commission on Environmental Quality (TCEQ) design criteria for sewerage systems (Chapter 217) and for water systems (Chapter 290), and the Texas Department of Transportation *Standard Specifications for Construction of Highways, Streets, and Bridges* shall be a part of the Technical Specifications for this project as though included herein, except as noted and amended herein.

All references to the City of Austin in the *Standard Specifications* shall be disregarded, as the City of Austin is not a party to this contract. Where appropriate, "City of San Marcos", can be used in place of "City of Austin".

All references to the Department in the TXDOT Standard Specifications shall be disregarded, as the TXDOT is not a party to this contract. Where appropriate, "City of San Marcos", can be used in place of "Department".

References in the *Standard Specifications* to specific sections of the General Conditions of the Contract shall be in effect.

References in the *Standard Specifications* to City of Austin Standard Details shall be disregarded. Where appropriate, "City of San Marcos", can be used in place of "City of Austin". Details on the Drawings take precedence, however, City of San Marcos Standard Details shall be referred to as available and applicable.

Although each section of the *Standard Specifications* includes a discussion of various methods of measurement and payment, measurement and payment will be accomplished in accordance with the bid form and the General and Supplementary Conditions of this Contract.

Any discrepancies between the construction plans and these specifications shall immediately be brought to the attention of the Engineer.

These specifications and contract documents shall be on site with the Contractor's representative at all times.

1.1 Standards

Reference to the standards of any technical society, organizations, or association, or to codes of local and state authorities, shall mean the latest standard, code, specification, or tentative specification adopted and published at the date of taking bids, unless specifically stated otherwise.

1.2 Modified Specifications

The following items in the City of Austin Standard Specifications and TxDOT standard specifications are modified as follows for use in this contract:

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Standard Details

The City of San Marcos has updated the Standard Details to be used on all projects. If a COSM detail does not meet construction needs, a separate detail must be prepared by the Engineer and approved by City Staff.

San Marcos details numbering system is similar to Austin; except a “-SM” is added to the detail number. For example. City of Austin Standard Detail *503S-7W Cleanout Ring and Cover* is replaced by City of San Marcos Standard *503S-7W-**SM** Cleanout Ring and Cover*. If the COSM created a new detail; it will have a letter in the between the hyphens. For example, *506S-**MV**-SM Manhole Vent* is a new detail that was not found on the City of Austin detail list. These are examples only; and may not apply to all situations.

City of San Marcos Details: <http://www.ci.san-marcos.tx.us/index.aspx?page=353>

- All construction plans must include the appropriate details in the bid set.
- The details shown in the approved bid set shall be used on projects.
- If the details are missing from the plan set; the most current detail shown on the web page shall be used.

City Of Austin Adopted Specifications

The City of San Marcos has adopted the City of Austin Specifications and modified them to fit the needs to the City of San Marcos. The adopted specifications can be found here:

City of San Marcos Adopted Specifications: <http://www.sanmarcostx.gov/index.aspx?page=1231>

All adopted specifications will say “City of San Marcos Adopted” in the top left corner of the specification. Verbiage that does not apply to City of San Marcos projects has been stricken through. If additional information has been added to the spec, there is a note that says “**See Modifications for additional information.*” This document contains the additional information. City of Austin shall be replaced with City of San Marcos throughout the specifications.

Current Version: 01/04/11 City of San Marcos Adopted 05/15/2014	Previous Versions: 08/20/07, 11/18/04, 04/05/99, 08/17/94 and 08/18/00
(50 millimeters) in diameter, exposed ends of pruned limbs or scarred bark shall be treated with an approved asphalt material within 24 hours of the pruning or injury.	
Construction equipment shall not be operated nor construction materials stockpiled under the canopies of trees, unless otherwise indicated on the Drawings and/or specified in the Contract Documents. Excavation or embankment materials shall not be placed within the drip line of trees until tree wells are constructed.	
* See Modifications for additional information	

Figure 1: Example from Adopted Specifications

If any details or specifications have errors or need revision/clarification, please send your comments to:

Capital_Imp_Info@sanmarcostx.gov

Or call 512.393.8130.

Item No. 101S Preparing Right Of Way

101S.3 Construction Methods

Modify the second paragraph as indicated below:

Delete: Areas within the construction limits shall be cleared of all obstructions, abandoned structures, and other items as defined above. All vegetation, except trees or shrubs indicated for preservation, shall also be removed. Trees and shrubs, which are scheduled for preservation, shall be carefully trimmed as directed and shall be protected from scarring, barking or other injuries during construction operations in accordance with Item No. 610S, " Preservation of Trees and Other Vegetation". All exposed cuts over 2 inches (50 millimeters) in diameter, exposed ends of pruned limbs or scarred bark shall be treated with an approved asphalt material within 24 hours of the pruning or injury.

Replace With: Areas within the construction limits shall be cleared of all obstructions, abandoned structures, and other items as defined above without damaging trees and shrubs to be preserved. The Contractor will remove saplings, shrubs and bushes from the tree's root protection zone of a protected tree by hand and shall not grade, store materials, dump waste, or cut within the trees root protection zone. The trees root protection zone is determined by measuring tree's diameter at 54 inches from the ground; tree protection zone is 1 foot radius per inch of tree diameter. All vegetation, except trees or shrubs indicated on the preservation and protection plan, shall be removed within the construction limits. Trees and shrubs, which are scheduled for preservation, shall be pruned according to the BMP and ANSI A300 Pruning Standards by a contracted ISA certified arborist and shall be protected from scarring, barking or other injuries during construction operations in accordance with Item No. 610S, " Preservation of Trees and Other Vegetation" and BMP and ANSI A300 Construction Management. All exposed cuts over 2 inches (50 millimeters) in diameter, exposed ends of pruned limbs, roots or wounded trunks shall be treated with an approved black spray paint within 20 minutes of the pruning or wounding. The Contractor will dispose of all debris generated by tree removal and pruning and properly at a green waste recycling facility.

Add the following:

When work is performed on private property or easements, all lawn grass, shrubbery, flowers, site utilities (including irrigation systems), trees and fences in the way of work shall be removed, protected, and replaced to their original condition and position upon completion of the work at the Contractor's expense.

If any irrigation systems are impacted and damaged or need to be relocated during construction, the Contractor shall be required to employ a licensed irrigator to repair or adjust the line. This work will not be paid for separately, but will be considered subsidiary to Item 101S, Preparing Right-of-Way.

Contractor shall relocate existing fences, vehicular and pedestrian gates to, or beyond, the

existing right-of-way unless otherwise indicated on plans. Contractor shall coordinate fence relocation with the respective property Owners. Relocated fences/gates shall be equivalent or better than existing fence/gates. Relocation will be subsidiary to the work unless noted as a separate bid item.

The Contractor will remove all trees nine (9) inches in diameter and under as identified within these plans. Payment for their removal to be covered under Item 101S, Preparing Right-of-Way. When directed by the City, removal of additional trees nine (9) inches in diameter or smaller and not called out on the plans but required for construction, will be paid for under Item 101S, Preparing Right-of-Way. Trees large than nine (9) will be paid for as separate line item unless specifically called out for removal on the plan sheets and no separate pay item is included on the bid form. City Inspector (512.393.8130) must approve any tree removal.

Adequate dust control measures shall be required at all times. This includes, but is not limited to, daily watering of the site, daily sweeping of the site, keeping spoils covered or any other measured deemed necessary by the inspector.

Item No. 102S Clearing and Grubbing

102S.3 Construction Methods

Add the following to the third paragraph:

Adequate dust control measures shall be required at all times. This includes, but is not limited to, daily watering of the site, daily sweeping of the site, keeping spoils covered or any other measured deemed necessary by the inspector.

Item No. 110S Street Excavation

110S.4 Construction Methods

Add the following to the second paragraph:

Adequate dust control measures shall be required at all times. This includes, but is not limited to, daily watering of the site, daily sweeping of the site, keeping spoils covered or any other measured deemed necessary by the inspector.

Item No. 111S Excavation

111S.4 Construction Methods

Add the following:

Adequate dust control measures shall be required at all times. This includes, but is not limited to, daily watering of the site, daily sweeping of the site, keeping spoils covered or any other measured deemed necessary by the inspector.

210S.5.B First Lift

Modify the seventh paragraph as indicated below:

Delete: Each lift shall be sprinkled as required to bring the material to optimum moisture content,

Replace With: Each lift shall be sprinkled, as required, to maintain moisture during compaction within ± 2 percentage points of the optimum moisture content as determined by Tex-113-E. Measure the moisture content of the material in accordance with Tex-115-E or Tex-103-E during compaction daily and report the results the same day to the Engineer, unless otherwise shown on the plans or directed. Do not achieve density by drying the material after compaction.

210S.5.E Priming

Add the following:

The prime coating of flex base shall be performed immediately following density testing and proof rolling.

Item No. 360S Concrete Pavement

360S.1 Description

Add the following:

If called out on the plans, all decorative concrete pavement shall include stamp patterns and colors selected by the City.

360S.2 Submittals

Add the following:

Provide stamp pattern product data and installation guide for Integral Color application.

Product data for color, release agent, clear seal and anti-skid additive.

Prepare a 9 square foot sample of pattern and color for approval prior to installation.

360S.3 Materials

Add the following:

R. Color

Color shall be Integral Color application which are mixed in directly with the concrete truck.

S. Release Agent

Release Agent shall be required and the color must be approved by the City.

T. Clear Seal

Clear seal shall be required and installed per manufacturer's recommendation.

U. Anti-skid Additive

Polypropylene grit additive shall be required and installed per manufacturer's recommendation.

360S.6.C Decorative Concrete (Construction Method) (Add New Section)

Add the following:

Coloring, stamping, and sealing of stamped concrete shall be installed per the per manufacturer's recommendation. Integral color method shall be used for coloring concrete. All decorative concrete pavement that will receive pedestrian or vehicle traffic will be required to include a polypropylene grit additive which will be installed with the clear seal per manufacturer's recommendation.

360S.9 Measurement

Add the following:

- C. When indicated, *Decorative Concrete Pavement* will be measured by the square yard of surface area of completed and accepted work. The surface area shall be so measured to also include that portion of pavement slab extending beneath the curb. When concrete pavement is to be measured by the square yard and monolithic curb is required, measurements for "Monolithic Curb" will be by the linear foot complete in place. Stamp pattern, color, release agent, anti-skid additive and clear seal will not be measured for separately. Each item will be included in the unit price bid for the bid item *Decorative Concrete Pavement*.

360S.10 Payment

Add the following to the first paragraph:

Stamp pattern, color, release agent, anti-skid additive and clear seal will not be paid for separately. Each item will be included in the unit price bid for the bid item *Decorative Concrete Pavement*.

Pay Item No. 360S-A-D: ____ In Decorative Concrete Pavement Per Square Yard

Item No. 402S Controlled Low Strength Material

402S.1 Description

Modify the first paragraph as indicated below:

Delete: This item governs Controlled Low Strength Material (CLSM) used for trench backfill and for filling abandoned culverts, pipes, other enclosures, and for other uses as indicated on the drawings, Standard Details or as approved by the Engineer or designated representative. CLSM is a low strength, self-compacting, flowable, cementitious material used in lieu of soil backfill. It is intentionally prepared at low strength to allow for future removal using conventional excavation equipment.

Replace With: This item governs Controlled Low Strength Material (CLSM) including:

- A. **CLSM Fill** used for trench backfill and for filling abandoned culverts, pipes, other enclosures, and for other uses as indicated on the drawings, Standard Details or as approved by the Engineer or designated representative.
- B. **CLSM Base** used for pavement subgrade repairs below the surface pavement and other applications requiring higher compressive strengths, and for other uses as indicated on the drawings, Standard Details or as approved by the Engineer or designated representative.
- C. For unconfined compressive strengths for CLSM Fill and CLSM Base, see Table 1 within this specification.

402S.3 (A) Cement

Modify the first paragraph as indicated below:

Delete: Portland cement shall conform to ASTM C 150, Type I (General Purpose).

Replace With: Portland cement shall conform to ASTM C 150, Type I (General Purpose) and ASTM C1157 Specification for Hydraulically Blended Cements, (Type GU)

402S.3 (B) Fly Ash

Replace with the following:

Fly ash shall conform to the requirements of TxDOT DMS-4610 “Fly Ash”

402S.3 (C) Filler Aggregate

Add the following:

Coarse Aggregate for CLSM Base: Filler aggregate shall consist of sand, stone screenings, pavement milling cuttings or other granular material that is compatible with the other mixture components and shall meet ASTM C33 or Texas Department of Transportation Grade 8 gradation

402S.3 (D) Mixing Water

Replace with the following:

Mixing water shall conform to the requirements of ASTM C1602 Standard Specification for mixing water used in the production of hydraulic cement concrete

402S.3 (E) Settlement Compensator

Modify the first paragraph as indicated below:

Delete: Standard Specification Item No. 405, "Concrete Admixtures".

Replace With: ASTM C260

402S.4 Mix Design

Modify Bullet A as indicated below:

Delete: ASTM C-360

Replace With: ASTM C6024

402S.5 Strength

Replace with the following:

The CLSM mix designs shall meet the unconfined compressive strength requirements outlined in the table below. The compression tests shall be conducted in accordance with TxDOT Method Tex-418-A or ASTM D4832

Table 1			
Unconfined Compressive Strength, PSI (mPa)			
Age	Normal Set CLSM Fill	Fast Set CLSM Fill	Fast Set CLSM Base
3 Hours		35 (0.24) Minimum	75 (0.52) Minimum
24 Hours	35 (0.24) Minimum		
28 Days	300 (2.1) Maximum	300 (2.1) Maximum	800 (5.5) Maximum

402S.7 Air Entrainment

Replace with the following:

Not Required.

402S.8 Field Strength Tests

Modify the second paragraph as indicated below:

Delete: ASTM C360

No. 403S Concrete for Structures

403S.7 Consistency and Quality of Concrete

Make the following modifications to Table 7: Expected Usage of Concrete Classes:

Class A: Remove “driveways” and replace with “Type I Driveways”

Class C⁵: Add “Type II Driveways”

403S.9.C Volumetric Batching (Mixing and Mixing Equipment)

Replace with the following:

Concrete from volumetric concrete trucks are not allowed.

Item No. 430S P.C. Concrete Curb and Gutter

430S.5 Measurement

Add the following:

If the plans do not specify how measurement shall be made for Curb and Gutter, then it shall be measured through the driveways. No payment will be made for curb and gutters at drainage inlets or sidewalk ramps.

Item No. 432S Portland Cement Concrete Sidewalks

432S.4 Construction Methods

Modify the second and third paragraph as indicated below:

Delete: If the subgrade is undercut by more than 4 inches (100 mm) or the elevation of the natural ground is more than 4 inches (100 mm) below "top of subgrade", then a necessary backfill/embankment layer of an approved material shall be placed and compacted with a mechanical tamper. Hand tamping will not be permitted.

Where the subgrade is rock or gravel, 70 percent of which is rock; the 2-inch (50 mm) cushion need not be used. The Engineer or designated representative will determine if the subgrade meets the above requirements.

Replace With: If the subgrade is undercut by more than 2 inches (50 mm) or the elevation of the natural ground is more than 2 inches (50 mm) below "top of subgrade", then a necessary backfill/embankment layer of an approved material shall be placed and compacted with a mechanical tamper. Hand tamping will not be permitted.

Modify the first sentence of the sixth paragraph as indicated below:

Delete: Reinforcement for sidewalks shall consist either of polypropylene fibrillated fibers or 6” x 6” x W1.4 x W1.4 (150mm x 150mm x MW9 x MW9) welded wire fabric or one layer #3 (10M) reinforcing bars, placed no more than 18 inches (450 mm) on center both directions.

Replace With: Reinforcement for sidewalks shall consist of one layer #3 (10M) reinforcing bars, placed no more than 18 inches (450 mm) on center both directions.
(Wire fabric shall not be used)

Delete the first sentence of the eight paragraph as indicated below:

Delete: Splices in wire fabric shall overlap sufficiently to allow two pairs of transverse wires to be tied together and no splice of less than 6 inches (150 mm) will be permitted.

Clarify the details referenced in the eleventh and thirteenth as indicated below:

Clarification: All references to COA details in these paragraphs shall be replaced with COSM standard detail 432S-3-SM.

P432S.6 Pedestrian Railing

Replace with the following:

Pedestrian railing shall be installed as indicated in the plans and per detail 707S-1-SM. The finishing of the pedestrian railing shall follow the plans. If the plans do not specify a finish, then Options 1 and 2 shall be galvanized and Option 3 shall be painted black. See detail for further clarification.

432S.8 Payment

Add the following the fourth paragraph as indicated below:

The limits of payment for the curb ramps shall be made per COSM standard detail 432S-3-SM. This payment includes any curb required to construction the curb ramp.

Delete Pay Items for Ramps and replace with the following

432S-RP-1:	P.C. Sidewalk Curb Ramp with Pavers (Type 1)	Per Each
432S-RP-2:	P.C. Sidewalk Curb Ramp with Pavers (Type 2)	Per Each
432S-RP-3:	P.C. Sidewalk Curb Ramp with Pavers (Type 3)	Per Each
432S-RP-5:	P.C. Sidewalk Curb Ramp with Pavers (Type 5)	Per Each
432S-RP-6:	P.C. Sidewalk Curb Ramp with Pavers (Type 6)	Per Each
432S-RP-7:	P.C. Sidewalk Curb Ramp with Pavers (Type 7)	Per Each
432S-RP-10:	P.C. Sidewalk Curb Ramp with Pavers (Type 10)	Per Each
432S-RP-11:	P.C. Sidewalk Curb Ramp with Pavers (Type 11)	Per Each
432S-RP-20:	P.C. Sidewalk Curb Ramp with Pavers (Type 20)	Per Each
432S-RP-21:	P.C. Sidewalk Curb Ramp with Pavers (Type 21)	Per Each
432S-RP-22:	P.C. Sidewalk Curb Ramp with Pavers (Type 22)	Per Each
432S-RP-23:	P.C. Sidewalk Curb Ramp with Pavers (Type 23)	Per Each

Delete Pay Items for Pedestrian Railing and replace with the following

432S-PR-1G:	Pedestrian Railing (Detail 707S-1-SM) Option 1 Galvanized	Per LF
432S-PR-1B:	Pedestrian Railing (Detail 707S-1-SM) Option 1 Black	Per LF
432S-PR-2G:	Pedestrian Railing (Detail 707S-1-SM) Option 2 Galvanized	Per LF
432S-PR-2B:	Pedestrian Railing (Detail 707S-1-SM) Option 2 Black	Per LF
432S-PR-3B:	Pedestrian Railing (Detail 707S-1-SM) Option 3 Black	Per LF

Item No. 433S P.C. Concrete Driveways

433S.2 Submittals

Modify bullet A as indicated below:

Delete: Item 360S p.c. concrete mix design

Replace With: Class C concrete mix design

433S.3.A Concrete (Materials)

Replace with the following:

The Portland Cement Concrete shall conform to Section 403S.7 (Table 5) of Standard Specification Item No. 403S, "Concrete for Structures." The Type I driveway shall conform to Class A and the Type II driveway shall conform to Class C.

433S.6 Payment

Add the following:

Laydown curb and gutter will be paid for as a separate pay item. Curb and gutter installed on the radius or along the ramps will be subsidiary to the driveway pay item.

Item No. 506 Manholes

506.4. E. Brick

Replace with the following:

Brick adjustment rings are not permitted.

506.4. F.1. Replacement Rings and Covers, 24 in Diameter Lids

Add the following:

24 in lids may also be used per SPL WW-218.

506.4. M. Precast Grade Rings

Replace with the following:

Precast grade rings are not permitted

506.4. N. High Density Polyethylene Grade Rings

Add the following:

HDPE grade rings shall be installed per the manufactures recommendation. This includes verifying the top of the cone is flat and smooth. If there are any uneven spots on the top of the cone, the contractor shall level the cone using mortar specified in 503S.3.E.

506.5.I.1 General (Height Adjustment of Manholes)

Modify the fourth, fifth and sixth paragraph as indicated below:

Delete: If the adjustment involves lowering the top of a manhole, a sufficient depth of pre-cast concrete rings or brick courses shall be removed to permit reconstruction. Existing mortar shall be cleaned from the top surface remaining in place and from all brick or concrete rings to be reused and the manhole rebuilt to the required elevation. The manhole ring and cover shall then be installed with the top surface conforming to the proposed grade.

If the adjustment involves raising the elevation of the top of the manhole in accordance with Minor Manhole Height Adjustment,” the top of brick or concrete ring shall be cleaned and built up vertically to the new elevation, using new or salvaged concrete rings or bricks and the ring and cover installed with the top surface conforming to the proposed grade.

After rings and covers are set to grade, the inside and outside of the precast concrete grade rings shall be wiped with non-shrink grout to form a durable surface and water-tight joints. The grouted surface shall be smooth and even with the manhole cone section. Grout shall not be placed when the atmospheric temperature is at or below 40F. If a sudden drop in temperature below 40F occurs or temperatures below 40F are predicted, the grouted surfaces shall be protected against freezing for at least 24 hours.

Replace With: If the adjustment involves raising or lowering the elevation of the top of the manhole in accordance with Minor Manhole Height Adjustment,” the exiting rings shall be removed to the top of the manhole cone and the top of cone will be clean of all mortar to a smooth surface. New rings shall be installed per the City of San Marcos details. The ring and cover may be salvaged if they are not damaged and approved by city inspector for reuse. The ring and cover will be installed with the top surface conforming to the proposed grade.

506.5.I.2 Minor Manhole Height Adjustment (New and Existing Manholes)

Replace with the following:

Minor manhole height adjustments shall be performed as indicated on City of San Marcos Standard 506S-4A-SM, “Manhole Height Adjustment” and as described in 506.5.I.1 General

(Height Adjustment of Manholes) .

For new manhole construction in the pavement, the maximum allowable throat or chimney height, including the depth of the ring casting, shall be limited to 18 inches of vertical face on the interior surface. For adjustments of existing manholes that fall within the limits of overlay and street reconstruction projects, the maximum vertical allowable height, including the depth of the ring casting, shall be limited to 24 inches of vertical face on the interior surface. Any adjustment that will exceed these requirements shall be accomplished as indicated on City of San Marcos Standard 506S-2-SM, Major Manhole Height Adjustment and as described below. Manholes located within paved areas (street right of way only) do not require bolted covers unless identified on the plans.

For new manholes outside the pavement, grade rings shall not be used. The top of the cone shall be installed above the finished grade per the detail. The ring shall be bolted to the cone and encased in concrete per the details. Manholes not located in paved areas shall have bolted covers.

506.5.I.4 Minor Manhole Height Adjustment (Existing Manholes With Existing Coating) (*Add New Section*)

Add the following:

For minor manhole height adjustment of existing manholes (with existing coating); following the same procedures listed in 506.5.I.1. and 506.5.I.2 with the following addition:

Prior to removing the existing concrete collar, the existing coating must be scored (at a depth sufficient enough to fully penetrate the coating) at the top to the cone. If the contractor damages the existing coating or fails to score the coating, prior to removing the concrete collar, the entire coating must be removed and replaced to bottom of the manhole cone at the Contractor's expense. The replacement coating must then be same coating that was originally installed and it must be installed per the manufactures recommendations.

506.5.I.5 Major Manhole Height Adjustment (Existing Manholes With Existing Coating) (*Add New Section*)

Add the following:

For major manhole height adjustment of existing manholes (with existing coating); following the same procedures listed in 506.5.I.1. and 506.5.I.3 with the following addition:

The existing coating must be removed and replaced to bottom of the manhole. The replacement coating must then be same coating that was originally installed and it must be installed per the manufactures recommendations.

506.5.I.6 Concrete Riser Collars (*Add New Section*)

Add the following:

After final paving is completed and/or the manhole cover is set to final grade, the contractor shall install concrete riser collars per detail 1100S-1-SM. This work is subsidiary to the manhole pay item.

506.5.K. Structural Linings of Existing Wastewater Manholes

Add the following:

Surface preparation of the existing manhole shall include the removal the existing coatings. It must be removed to bottom of the manhole per the manufactures recommendations.

506.7 Measurement

Add the following:

A "Wastewater Access Device" will be measured by each device indicated, regardless of depth.

506.8 Payment

Add the following:

Payment for "Minor Manhole Height Adjustment W/Coating" and "Major Manhole Height Adjustment W/Coating" will be made at the unit bid price, complete in place, and will include the removal and replacement of the coating. .

Payment for completed Wastewater Access Device shall be made at the appropriate unit bid price. The unit bid price shall include all labor, equipment, materials, (including but not limited to frames and grates, rings and covers, adjusting rings, cone sections, riser sections, gaskets, drop piping and fittings, bases, pipe-to-manhole connectors, concrete, reinforcing steel, non-shrink grout, mortar, joint wrap where specified, time and incidentals necessary to complete the work.

Payment for a "Wastewater Access Device" will be made at the unit bid price, complete in place.

Removal and disposal of existing sanitary sewer manholes shall be considered subsidiary to other work. No additional payment for removal and disposal of manholes shall be made.

Pay Item No. 506S 2-C__: Major Manhole Height Adjustment W/Coating, ___ Dia. Per Each.

Pay Item No. 506S 4-C__: Minor Manhole Height Adjustment W/Coating, ___ Dia. Per Each.

Pay Item No. 506WWAD: Wastewater Access Device Per Each

Item No. 508S Miscellaneous Structures and Appurtenances

508S.5 Construction Method (Concrete Collars)

Add the following:

Stormwater: Concrete Collars are required on all connections between RCP stormwater pipe and junction box/manholes/inlets. All concrete collars shall be construction with Class A concrete per 508S.4.A. Collars shall be constructed per COSM Detail 508S-CC-SM. Concrete collars are subsidiary to the work as indicated in 508S.6.

Wastewater: Concrete Collars are required on all connections between existing wastewater laterals/pipe when PVC connects to non-PVC pipe. All connection require a coupling per SPL WW-354. The coupling shall be encased in at least 6" of with Class A concrete per 508S.4.A.

If approved by the Owner, package concrete will be allowed per SPL WW-704. Concrete collars are subsidiary to the work as indicated in 508S.6.

510.2(2)(a) Pipe Bedding Stone

Replace with the following:

Bedding shall be angular material (crushed stone) that is clean, washed material, hard and insoluble in water, free of mud, clay, silt, vegetation or other debris.

1. Modified Grade 5 gravel.

Seive Size	Percent Passing
1/2"	100%
3/8"	95-100%
#4	20-80%
#10	0-25%
#20	0-2%

2. ASTM C33 size No. 57

Sieve Size	Percent Passing
1 1/2"	100%
1"	95-100%
1/2"	25-60%
#4	0-10%
#8	0-5%

3. ASTM C33 size No. 67

Sieve Size	Percent Passing
1"	100%
3/4"	90-100%
3/8"	20-55%
#4	0-10%
#8	0-5%

510.2(3)(b) Bedding Sand

Replace gradation table with the following:

Sieve Size	% Retained By Weight
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1/4"	0%
#60	75%-100%
#100	90%-100%

510.2(8) Pipe

Replace with the following:

Wastewater pipe materials shall be installed in accordance with the latest version of the Wastewater Collection System Design Criteria Technically Manual located on the Engineering Webpage.

Potable and Reclaimed water pipe materials shall be installed in accordance with the latest version of the Water Design Manual located on the Engineering Webpage. The table below is from the design manual.

The following material shall be used for water main construction. This table shall supersede the material references in this specification.

Pipe Material	Use	Pipe Sizes	Classification
Copper Tubing	Service Lines	1"	Type K
Polyethylene Tubing	Service Lines	1"	C901
PVC	Service Lines	2"-3"	Schedule 80
PVC	Distribution, Service Lines	4"-12"	C900 DR 14
Ductile Iron	Fire hydrant lead, distribution	6"	C151 CI 350
Ductile Iron	Distribution Line	8"-12"	C151 CI 350
Ductile Iron	Transmission Line	16"-60"	C151 CI 250
PVC	Transmission Line	16"-24"	C900 DR 18

All water distribution pipe and fittings shall be listed in the Fire Protection Equipment Directory published by the Underwriter's Laboratories, Inc., or shall be Factory Mutual approved for fire service. All water pipe and related products shall be registered by the National Sanitation Foundation as having been certified to meet NSF/ANSI Standard 61.

All PVC pipe shall be protected from UV exposure. If the inspector determines that the pipe is faded or damaged by UV exposure, the pipe shall be rejected and replaced with pipe that is not damaged.

510.2(8)(f).1 General (Polyethylene Tubing)

Add the following:

The tubing shall have a copper tracer wire with insulation installed the entire length of the polyethylene tubing.

510.2(8)(h) Service Connection Fittings

Add the following:

Connection to customer side of the water meter shall be made using brass parts. Connection to the customer service line shall be made with Smith Blair Type 411 steel dresser coupling or approved equivalent.

510.2(8)(k)(1) General (for Polyvinyl Chloride Potable/Reclaimed Water Pipe)

Add the following:

For water pipe sized 2 and 3 inches, Schedule 80 PVC pipe per SPL WW 587 Series shall be used. Glue on bends will not be allowed. Fittings must be per SPL WW 587B and payment will be subsidiary to the pipe.

510.2(8)(k)(2) Applicable Specifications (for Polyvinyl Chloride Potable/Reclaimed Water Pipe)

Add the following:

Schedule 80 for PVC Pressure Pipe, in 2 and 3 inch nominal sizes, having Cast Iron Pipe size outside diameters.

AWWA C-905, DR 18 for PVC Pressure Pipe, in 16, 18, and 24 inch nominal sizes, having Cast Iron Pipe size outside diameters.

510.2(8)(l) Polyvinyl Chloride (PVC) Pipe (Nonpressure) and Fittings

Delete entire section and replace with the following:

Polyvinyl Chloride (PVC) Pipe and Fittings for Wastewater

1. General
PVC sewer and wastewater pipe and fittings shall conform to SPL WW-227 Series.
2. Joints
PVC pipe and fitting shall have elastomeric gasket joints conforming to ASTM D 3212. Gaskets shall conform to ASTM F 477.
3. Pipe Markings
Pipe shall have permanent marking on the pipe that includes the following at intervals of not more than 5 feet:
 - Manufacturer's name and/or trademark and code.

- Nominal pipe size.
 - PVC cell classification per ASTM D 1784.
 - For ASTM 3034 or 2241: "SDR-__ PVC Sewer Pipe" (SDR 26 or less is required)
 - For ASTM F 679: Pipe stiffness designation "PS __ PVC Sewer Pipe" (PS of at least 72 is required)
 - The designation "ASTM D 3034" or "ASTM D 2241" or "ASTM F 679"
4. Fitting Markings
- Fittings shall have permanent markings that includes the following:
- Manufacturer's name and/or trademark and code.
 - Nominal pipe size.
 - The material designation "PVC"
 - The designation "ASTM D 3034" or "ASTM D 2241" or "ASTM F 679"
5. Tracer Tape
- Tracer Detection Tape shall be placed directly above the centerline of all non-metallic a minimum of 18 inches and a maximum of 24 inches below finished grade. Refer to SPL WW-597series for additional requirements.

510.3(4) Trench Excavation

Add the following:

In order to minimize environmental and potential flood impacts, the sum of the amount of trench opened in advance of the completed line and the amount of trench left unfilled at any time shall be restricted to one full block or 100 linear feet, whichever is less.

Adequate dust control measures shall be required at all times. This includes, but is not limited to, daily watering of the site, daily sweeping of the site, keeping spoils covered or any other measured deemed necessary by the inspector.

510.3(6)(b) Trench Depth and Depth of Cover

Replace bullets 1 & 2 with the following:

1. Wastewater piping installed in natural ground in easements or other undeveloped areas, which are not within existing or planned streets, roads or other traffic areas shall be laid with at least 36 inches of cover.
2. Wastewater piping installed in existing streets, roads or other traffic areas shall be laid with at least 60 inches of cover.

510.3(14) Pipe Bedding Envelope

Add the following:

All lines shall have a minimum of 6 inches of embedment material below the bottom of the pipe. The initial layer of embedment placed to receive the pipe shall be brought up to a grade higher than that required for the bottom of the pipe. The pipe shall be placed and brought to grade by tamping or by removal of the slight excess amount of embedment under the pipe. Adjustments to grade shall be made by scraping away or filling with embedment material. Wedging or blocking up of pipe will not be permitted. Each pipe section of the pipe shall have a uniform bearing on the embedment for the length of pipe, except immediately at the joint. All lines shall have a minimum of 6 inches of granular embedment material on each side of the pipe and not less than 12 inches above the top of pipe.

510.3(14)(a) Standard Bedding Materials

Replace with the following:

Pipe Size	Bedding Sand	Modified Grade 5 Gravel	ASTM C33 Size No. 67	ASTM C33 Size No. 57
1" Copper or Polyethylene	Allowed			
2"-3" PVC Pipe	Allowed	Allowed		
All *Pipe 4" and Greater			Allowed	Allowed

**If the manufacture of the pipe recommends a smaller or different embedment; the more stringent particle size shall be followed.*

510.3(15) Laying Pipe

Add the following:

Straps or other approved method to be used to transport pipes. Chains will not be allowed when handling pipe.

510.3(21)(a) Protective Covering

Replace with the following:

Unless otherwise indicated, all flanges, nuts, bolts, threaded outlets and all other steel component shall be coal tar coated (or a manufactures approved anti-seize compound such as KORP-KOTE) and shall be wrapped with standard minimum 8-mil (0.2 mm) low density polyethylene film meeting ANSI/AWWA Specification C-105-current, with all edges and laps taped securely with 10-mil PVC tape to provide a continuous and

watertight wrap. Repair all punctures of the polyethylene, including those caused in the placement of bedding aggregates, with 10-mil PVC tape to restore the continuous protective wrap before backfilling. For reclaimed water piping, the polyethylene shall be purple. Duct tape will not be allowed.

510.3(22) Pipe Anchorage, Support and Protection

Add the following:

All fittings shall be mechanically restrained.

Concrete thrust blocking shall not be used; except for connections made to asbestos cement pipe or taps 2” and greater made on asbestos cement pipe or as directed by the owner.

510.3(22)(b) Metal Thrust Restraint

Add the following:

Joints shall be restrained with Ford Uni-Flange, EBAA Iron Megalug products, or approved equivalent.

510.3(22)(b)(1) Thrust Harness

Modify the last sentence of the first paragraph as indicated below:

Delete: After installation, the entire assembly shall be wrapped with 8-mil polyethylene film, overlapped and taped in place with duct tape to form a continuous protective wrap.

Replace With: After installation, the entire assembly shall be wrapped with 8-mil polyethylene film, overlapped and taped in place with 10-mil PVC tape to form a continuous protective wrap.

510.3(22)(b)(2) Restrained Joints

Add the following:

Bell joints shall be mechanically restrained in accordance with the Engineer’s specifications that are based on site conditions or a minimum of one restrained bell joint on either side of all restrained fittings; whichever requirement is more stringent. A joint restraint table, sealed by the Engineer, must be used.

510.3(23) Wastewater Connections (*By-pass Pumping*)

Add the following:

The Contractor shall provide by-pass pumping of sewage around each segment of pipe to be replaced, in accordance with Special Specification 1540. Payment for such work will be subsidiary to sanitary sewer main installation unless a separate bid item for by-pass pumping is provided in the bid documents.

510.3(23)(a) Wastewater Connections

Modify the second paragraph as indicated below:

Delete: Minimum grade shall be 1 percent downward to main and minimum cover shall be 4 1/2 feet at the curb.

Replace With: The minimum slope allowed for service lines is 2.0% (6/25-inch per linear foot). Grade breaks should be made with standard fittings and not exceed 45 degrees. Minimum service line depth of cover at the curb line is 36-inches.

Add the following:

All sewer lateral services for future connections, as identified on plan and profiles, shall be capped and sealed. The Contractor shall be responsible for disconnecting each existing service line from the existing main and re-connecting the service to the new main. The Contractor shall be responsible for maintaining continuous service (no separate pay item). Laterals shall be constructed to serve all existing houses and vacant lots.

510.3(24)(a) Shutoffs

Modify the first paragraph as indicated below:

Delete: The City will make all shutoffs on existing potable or reclaimed water mains. The

Contractor shall be required to notify the Owner's Representative in writing a least twenty five (25) Calendar Days prior to the anticipated date for a wet-connection. The Owner's Representative is defined as the City Inspector. The Owner's Representative will notify any affected utility customers at least 48 hours prior to the shutoff. Austin Water (AW) will make the shutoff after ensuring that all appropriate measures have been taken to protect the potable or reclaimed water system, customers and employees.

Replace With: The City will make all shutoffs on existing potable or reclaimed water mains. The Contractor shall be required to notify the Owner's Representative in writing a least fifteen (15) Business Days prior to the anticipated date for a wet-connection. The contractor will notify any affected utility customers at least 24 hours prior to the shutoff.

The City will provide the notices; but the contractor will be responsible for printing off the notices and delivering them to each customer that will be affected. No additional compensation will be provided delivering the notices. The City will make the shutoff after ensuring that all appropriate measures have been taken to protect the potable or reclaimed water system, customers and employees.

510.3(24)(b) Wet Connections to Existing Potable or Reclaimed Water System

Add the following:

The Contractor shall expose and verify the existing pipe size, depth and material at the proposed tie in location 24 hours prior to the City isolating the system for a wet connection.

During construction, the planned shutdown and tie-in shall be coordinated through and approved by the Construction Inspector and accomplished at a time which will be at the least inconvenience to the customers. No additional compensation will be provided for tie-ins

accomplished after normal working hours.

No additional payment will be made for transition couplings or specialty fittings required to make the wet connection, regardless of the existing pipe material.

510.3(24)(c) Pressure Taps to Existing Potable or Reclaimed Water System

Add the following:

Any taps to AC water pipe will be made utilizing stainless steel tapping sleeves.

510.3(24)(d) Service Connections

Add the following:

No meter boxes, valves or other obstructions shall be set in sidewalks or driveways unless approved by Owner. Any meter boxes or valves set in sidewalks or driveways will be relocated at Contractor's expense. All meters and valves must be located on a public right-of-way or easement.

510.3(25)(a) General (Backfilling)

Add the following:

Testing shall be required per Tex-115-E (nuclear gauge) everywhere Tex-114-E is specified; even if Tex-115-E is not specifically stated.

510.3(25)(g) Backfill in Easements

Modify the first paragraph as indicated below:

Delete: Where not otherwise indicated, Contractor may select whatever methods and procedures may be necessary to restore entire Work area to a safe, useful and geologically stable condition with a minimum density of 85 percent or a density superior to that prior to construction.

Replace With: Where not otherwise indicated, Contractor may select whatever methods and procedures may be necessary to restore entire Work area to a safe, useful and geologically stable condition with a minimum density of **90 percent** or a density superior to that prior to construction.

510.3(25)(h) Temporary Trench Repair/Surfacing

Add the following:

Trenches in paved streets will be covered with a temporary all weather surface to allow for vehicular traffic until the final asphalt/concrete paving is complete. This surface will be a minimum of four (4) inches compacted and rolled asphaltic black base, either hot-mix or coldmix applied. The material used shall meet the specifications requirements for 206S Asphalt Stabilized Base. It is the Contractor's responsibility to maintain this surface until the final street restoration is complete. Temporary street striping may also be required. This surface must be removed prior to final asphaltting. This temporary paving will be subsidiary to the pipe.

510.3(26) Quality Testing for Installed Pipe

Add the following:

All testing procedures, for the acceptances of collection system pipe that will transport wastewater by gravity flow, shall conform to requirements of the Texas Commission on Environmental Quality given in the Texas Administrative Code Title 30 Part 1 Chapter 217 Rule §217.57. These test are discussed in Section 510.3(26). If there is a conflict between these specifications and the rules as discussed in Rule §217.57; the more stringent requirement shall apply. The Contractor shall complete all testing and coordinate with the City inspector for all inspections.

510.3(26)(d) Pipeline Settlement Test

Add the following:

a) Television Inspection Requirements

The contractor shall be PACP (Pipeline Assessment Certification Program) certified and be able to provide documentation to that effect, on request. The Contractor shall complete all testing and coordinate with the City inspector for all inspections after final backfill. The Contractor shall furnish all labor, materials and equipment to provide televising and videotaping of sewer lines utilizing a color closed circuit television inspection unit to verify that there are no sags and to locate and view along service connections. The camera should have the capability to be remotely controlled such that a 360 degree view can be obtained around the circumference of the pipe.

The T.V. unit shall have the capability of displaying on video information concerning the pipe inspection observations. The television inspection equipment shall have an accurate footage counter which displays on the monitor the exact distance of the camera from the center line of the starting manhole. Each video shall be permanently labeled with the following:

- i. Project Name
- ii. Date televised
- iii. Station to Station location and size of pipe
- iv. Street or easement location
- v. Name of Contractor
- vi. Video number(s)

In addition, each video shall have a written log of all defects, sags, offsets, service connection condition and locations recorded on a footage basis. This inspection log shall also indicate the section televised, flow and camera direction, position of video failures, pipe and weather conditions. The video and inspection logs shall become property of the City.

b) Procedure For Determining Pipe Settlement

T.V. inspection shall be done one manhole section at a time. The camera heights shall be adjusted so that the lens is centered (1/2 I.D. or higher) in the pipe being televised. In no case shall the television camera be pulled or propelled through the line at a speed greater than 25 feet per minute. If the depth of flow at the upstream manhole of the section is above the maximum allowable for television inspections, the flows shall be reduced to an allowable level by temporarily plugging or blocking the flow, or performing the inspection during minimum flow hours or by by-passing pumping around the section. If the camera is unable to pass an obstruction, the Contractor shall televise the manhole section from the other direction to provide a suitable video of the entire manhole section. Upon completion of the sanitary sewer main backfilling and after mandrel testing, the sanitary sewer main shall be televised by running water through the sewer line and checking for bellies in the main. **Any standing water greater than 1/2 the diameter of the golf ball (1-5/8") shall be excavated and corrected to eliminate the belly at no additional cost to the COSM.**

The method(s) used for securing passage of the camera are to be at the discretion of the Contractor and approved by the Engineer. No additional payment will be made for an excavation or other method which may be required to retrieve video equipment that has been hung up, destroyed or lost during the televising operation.

If the Contractor produces a video of such poor quality that the Engineer is unable to evaluate the condition of the sanitary sewer main or locate and view up the sanitary sewer service lateral connection, the Contractor shall be required to re-televising the sewer main and provide a video of good quality at no additional cost to the City. If the Contractor cannot provide a video of such good quality that can be reviewed by the Engineer, the City may elect to televise the line at the Contractor's expense.

510.3(26)(e)(3) Test Procedure (*Low Pressure Air Test of Gravity Flow Wastewater Lines*)

Add the following:

The Inspector may choose to stop a test if no pressure loss has occurred during the first 25% of the calculated testing time. If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration or until failure of the test.

The Contractor shall determine, at his own expense, the source or sources of leakage and repair or replace all defective materials and/or workmanship. The extent and type of repair which may be allowed shall be subject to the approval of the Engineer. The completed pipe installation shall then be retested to the requirements of the original test.

510.3(26)(f) Deflection Test

Add the following:

A mandrel, constructed by the contractor, shall be pulled through the entire line to determine whether the maximum allowable 5% deflection has been exceeded. The diameter of the mandrel shall be 5% less than the inside diameter of the sewer line as calculated by the formula:

$$\text{Mandrel O.D.} = 0.95 \times \text{Base ID of the pipe to be tested.}$$

(See COSM detail 510S-PM-SM)

In such cases where the mandrel may hang due to excess deflection, the pipe shall be uncovered at this point and the conditions shall be corrected. Correction may be by reworking the embedment and backfill, or by replacing that section of pipe. This portion of the pipe shall again be backfilled, and the mandrel pulled through again. This process shall be repeated until the pipe is clear of all obstructions.

510.3(27) Pressure Pipe Hydrostatic Testing

Replace with the following:

1. Hydrostatic Testing for Waterlines

The Contractor shall complete all testing and coordinate with the City inspector for all inspections after final backfill. After the pipe has been installed and backfilled and all service lines, fire hydrants, and other appurtenances installed, connected and raised to final grade; a leakage test, followed by a pressure test shall be conducted. The specified test pressures will be based on the elevation of the lowest point of the line or section under test. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air release valves are not located at all high points, the contractor shall install corporation cocks at such points.

a) Pressure Test

Each valved section of the entire project shall be tested, at a pressure of 200 psi for a sufficient period (approximately 10 minutes) to discover all leaking or defective materials. Repairs shall be made by the contractor to correct any leaking or defective materials.

b) Pressure Pipe Leakage Test

A leakage test will follow the pressure test and be conducted on each valved section of the entire project. The leakage test shall be at 150 psi for at least 2 hours.

Leakage shall be defined as the quantity of water that must be supplied into any test section of pipe to maintain the specified leakage test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. The allowable leakage shall comply with AWWA C 600 or AWWA C-605 which define the allowable leakage as:

$$Q = \frac{S * D * \sqrt{P}}{148,000}$$

where;

Q = Quantity of makeup water in gallons per hour (Leakage)

S = Length of the pipe section being tested, in feet

D = Diameter (inside) of pipe in inches

P = Average test pressure during the hydrostatic test in pounds per square inch (psi)

If such testing discloses leakage in excess of the calculated amount, the contractor, at his expense, shall locate and correct all defects in the pipeline until the leakage is within the indicated allowance.

2. Hydrostatic Testing for Wastewater Force Mains

The Contractor shall complete all testing and coordinate with the City inspector for all inspections. All wastewater force mains shall be hydrostatically tested by the Contractor after connections have been made to lift station pumps and prior to placing the line or lines in service. Test pressure shall be 50 psi maintained for a duration of one (1) hour after all defective joints, pipe, valves, or breaks have been satisfactorily corrected. Tests shall be made to valved sections of the lines and shall be limited to section lengths as approved by the engineer. Tests shall be witnessed by representatives of the City. Each tested section of pipe shall be slowly filled with water as to expel all air from the line prior to application of test pressure. If permanent air release valves (automatic or manual) are not located at all high points, the contractor shall furnish and install corporation cocks at such points so the air can be expelled, the corporation cocks shall be closed, and a pipe cap installed "hand tight".

No test section will be accepted until the pipe joints show no sign of leakage when tested at 50 psi as specified herein. Any visible leaks, regardless of the type of pipe, shall be eliminated.

The contractor shall, at his own expense, locate and repair all leaks. Contractor shall furnish test plugs, taps for testing, etc.

510.3(28) Service Charges for Testing

Delete the entire section.

510.3(29) Disinfection of Potable Water Lines

Replace with the following:

The Contractor shall complete all disinfection and coordinate with the City inspector for all inspections. The contractor shall protect all piping materials from contamination during storage, handling and installation. Prior to disinfection, the pipeline interior shall be clean, dry and unobstructed. All dirt, debris, gasket lubricant, etc., shall be washed from the line by swabbing with hypochlorite solution and/or flushing with clean water.

The contractor, at his expense, shall provide all equipment, supplies and the necessary labor to perform the sterilization under general supervision of the City. In addition, the contractor shall submit a written plan of disinfection for review and approval by the City.

Reference for the standard procedure for sterilization of water lines is made to AWWA C651 86, "Disinfecting Water Mains". The Contractor is responsible for ensuring that the formula for this calculation is correct and most current formula per AWWA C651 is used.

a) Procedure and Dosage

All valves shall be arranged to prevent the strong disinfecting dosage from flowing back into the existing water supply piping. The new pipeline shall then be completely filled with disinfecting solution by feeding the concentrated chlorine and approved water from the existing system uniformly into the new piping in such proportions that every part of the line has minimum concentration of 50 parts per million (50 ppm or 50 mg/liter) available chlorine.

Unless otherwise indicated, all quantities called for herein refer to measurements by the testing procedures in the current edition of "Standard Methods". The chlorine concentration of each step in the sterilization procedure shall be verified by chlorine residual determinations. This disinfecting solution shall be retained in the piping for at least 24 hours and all valves, hydrants, etc., shall be operated to disinfect all their parts. After this retention period, the water shall contain no less than 25 parts per million chlorine throughout the treated section of the pipeline.

This heavily chlorinated water shall then be carefully flushed from the line until the chlorine concentration is no higher than the residual generally prevailing in the existing distribution system, or approximately 1 part per million. Proper planning and appropriate preparations to handle, dilute and dispose of this strong chlorine solution without causing injury or damage to the public, the water system or the environment must be approved by the City before flushing of the line may begin and the flushing shall be witnessed by an authorized representative of the City.

If large rocks and/or debris, as determined by the Inspector, are witnessed leaving the water main during flushing, the contractor will be required to clean the water main until no more debris is witnessed leaving the main. The contractor must submit a proposed plan that meets the satisfaction of the City, which may include pigging the line if requested by the City. Any additional efforts to clean the line due to debris is at the contractor's expense.

b) Bacteriological Testing

After final flushing of the strong disinfecting solution, water samples from the line shall be tested for bacteriological quality by the City and must be found free of coliform organisms before the pipeline may be placed in service. One test sample shall be drawn from the end of the main and additional samples collected at intervals of not more than 1000 feet along the pipeline.

The contractor, at his expense, shall install sufficient sampling taps at proper locations along the pipeline. Each sampling tap shall consist of a standard corporation cock installed in the line and extended with a copper tubing gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

Samples for bacteriological analysis shall be collected only from suitable sampling taps in sterile bottles treated with sodium thiosulfate. Samples shall not be drawn from hoses, fire hydrants, etc. The City, at its expense, will furnish the sterile sample bottles and collect the test samples with City personnel.

If the initial disinfection fails to produce acceptable sample test, the disinfection procedure shall be repeated until satisfactory test results have been obtained before the piping may be placed in service. Subsequent tests will be charged to the contractor.

All bacteriological samplings must be certified within 20 days of project acceptance. All waterlines not placed in service after passing the bacteriological testing must be retested

within five (5) days of final acceptance. On all tested and passed water lines that are dead end, or not yet tied into a water system, an automatic flush valve shall be installed with an approved water meter.

510.3(33) Abandoning Existing Utilities (*Add New Section*)

1. Water Mains

All existing water mains to be abandoned upon completion of the project shall be cut and plugged at the general location shown on the plans. An approved plug shall be used and the exact locations shall be marked and field verified with the Owner. This work shall be subsidiary to the pipe installation.

2. Water Meters and Meter Boxes

Water meters to be abandoned shall be removed at the locations indicated on the plans with the service lines cut and the meters and meter boxes delivered by the Contractor to a yard located at 630 E. Hopkins, San Marcos, Texas.

510.4 Measurement

Modify the fifth paragraph as indicated below:

Delete: Connecting a new water, wastewater, or reclaimed water service to an existing, comparable type of private service will be measured by each connection. Service pipe from the main to the service connection will be measured by the linear foot.

Replace With: Connecting a new water, wastewater, or reclaimed water service at the new main to an existing, comparable type of private service at the property line can be paid by two different options:

1. Measured by each service or laterals; payment will be made by long or short service/lateral. Service pipe from the main to the service connection will not be measured. This work will include the connection at the main and the connection at the meter; including by not limited to the service saddle and fittings required to complete the connection per the detail.

2. Measured by each connection at the meter and linear feet of service pipe from the main to the service connection. This work will include the connection at the main and the connection at the meter; including by not limited to the service saddle and fittings required to complete the connection per the detail.

Modify the last paragraph as indicated below:

Delete: Jumper hose will be measured per linear foot of hose installed, including all depths, excavation and backfill, complete, and in place.

Replace With: Jumper hose will not be measured for payment. This work shall be subsidiary to the pipe installation.

Add the following:

“Short Service/Lateral” shall be defined as a service in which the water or sewer main is on the same side of the street as the meter or cleanout; in relation to the centerline of the street or easement. This is for a single service; unless “dual” is added to the description.

“Long Service/Lateral” shall be defined as a service in which the water or sewer main is on the opposite side of the street as the meter or cleanout; in relation to the centerline of the street or easement. This is for a single service; unless “dual” is added to the description.

“Water Service Relay” shall be defined as laying a copper or polyethylene pipe between a new water main and a single or dual water meter. The services must be defined as short or long.

“New Unmetered Water Service” shall be defined as laying a copper or polyethylene pipe between a new water main and a property without a meter. This line item will include a new meter box. The services must be defined as short or long.

“Sanitary Sewer Lateral” shall be defined as laying a 6” sewer pipe between a new main and the property line. The services must be defined as short or long.

Fittings for Schedule 80 PVC shall not be measured. Payment for fittings specified in WW-587B shall be subsidiary to pipe.

510.5.1 Pipe (Payment)

Add the following:

When indicated on the plans; copper or polyethylene pipe for water services and pipe for sanitary sewer laterals will be paid per EA connection to the main.

510.5.5 Wet Connections to Water Mains (Payment)

Add the following:

The size of the wet connections can be grouped for existing mains 12” and smaller OR for any size above 12”, if the appropriate bid item used. If these line items are used in the bid; then payment will be same for all wet connections within the range of the bid item.

510.5.6 Fittings (Payment)

Add the following:

Fittings for Schedule 80 PVC shall not be measured. Payment for fittings specified in WW-587B shall be subsidiary to pipe.

510.5.12 Connecting a New Water, Wastewater, or Reclaimed Water Service (Payment)

Add the following:

Payment for a “**Long or Short Water Service Relay**” will be made at the unit price for each service line of the various sizes relayed. Payment shall include reconnection of new service to the existing meter and the adjustment of the meter, meter box, and Customer valve. Such payment shall also include connection to new main, excavation, trench excavation protection, hauling and disposition of surplus excavated materials, sand backfill, cutting pavement and surface structures of whatever type encountered and replacement with whatever type specified, and tubing, service saddle, corporation stop, angle valve and fittings of the various sizes used in the service line relay.

Payment for a “**Dual Long or Short Water Service Relay**” will be made at the unit price for each service line of the various sizes relayed. Payment will be the same as above; but will include additional fittings per the detail and additional efforts to connect to two meters instead of one. (Note: Dual Services are not allowed on meters 1” and larger”

Payment for a “**Long or Short New Unmetered Water Service**” will be made at the unit price bid for each new unmetered service line of the various sizes installed. Such payment shall also include connection to new main, excavated materials, trench excavation protection, sand backfill, cutting in pavement and surface structures of whatever type encountered and replacement with whatever type specified, new meter box, meter template, tubing, service saddle, corporation stop, angle valve and fittings, of the various sizes used in the new unmetered service line installation. (Note: Dual Services are not allowed on meters 1” and larger”

Payment for a “**Dual Long or Short New Unmetered Water Service**” will be made at the unit price for each service line of the various sizes relayed. Payment will be the same as above; but will include additional fittings per the detail and a larger meter box.

Payment for a “**Long or Short Sanitary Sewer Lateral**” will be made at the unit price bid for each lateral of the various sized installed. Price shall be full compensation for furnishing all materials, including connection to new main, pipe, pipe fittings (to include wyes, tees, bends), cleanout, pumping, bedding, trenching or boring, trench protection, backfilling, tamping, cutting pavement and surface structures of whatever type encountered and replacement with whatever type specified and other incidentals required to complete the work.

Payment for a “**Dual Long or Short Sanitary Sewer Lateral**” will be made at the unit price for each service line of the various sizes relayed. Payment will be the same as above; but will include additional fittings per the detail and additional efforts to connect to two laterals instead of one.

510.5.14 Jumper Hose (Payment)

Delete and Replace with the following:

Jumper hoses will not be measured for payment. This work shall be subsidiary to the pipe installation. This includes the installation and removal of all materials necessary to provide a fully functional jumper hose. This shall also include adequate protection for the jumper hose within vehicular traffic areas.

Add the following Pay Items:

510-JR 12” and Smaller	Wet Connection, 12” and smaller	Per Each
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510-JR Larger than 12"	Wet Connection, Larger than 12"	Per Each
510-SWSR-W 1" Dia	1" Dia. Short Water Service Relay	Per Each
510-LWSR-W 1" Dia	1" Dia. Long Water Service Relay	Per Each
510-SWSR-DW 1" Dia	1" Dia. Short Water Service Relay - Dual	Per Each
510-LWSR-DW 1" Dia	1" Dia. Long Water Service Relay - Dual	Per Each
510-SWUS-W 1" Dia	1" Dia. Short Water Unmetered Service	Per
Each		
510-LWUS-W 1" Dia	1" Dia. Long Water Unmetered Service	Per
Each		
510-SWUS-DW 1" Dia	1" Dia. Short Water Unmetered Service -Dual	Per
Each		
510-LWUS-DW 1" Dia	1" Dia. Long Water Unmetered Service-Dual	Per Each
510-SSSL-WW 6" Dia	6" Dia. Short Sanitary Sewer Lateral	Per Each
510- LSSL-WW 6" Dia	6" Dia. Long Sanitary Sewer Lateral	Per Each
510-SSSL-DWW 6" Dia	6" Dia. Short Sanitary Sewer Lateral - Dual	Per Each
510- LSSL-DWW 6" Dia	6" Dia. Long Sanitary Sewer Lateral-Dual	Per Each

Item No. 511S Water Valves

511S.1 Description

Modify the fourth sentence of the first paragraph as indicated below:

Delete: Unless otherwise indicated on the Drawings, all valve stems shall be adjusted to situate the operating nut not more than 24 inches (0.6 meters) below the proposed ground or paving surface of the finished project.

Replace With: The tops of the valve stems shall be installed per detail 511S-7-SM..

511S.3.E(1) Applicable Specifications

Modify the second paragraph as indicated below:

Delete: NFPA 1963: "National (American) Standard Fire Hose Coupling Screw Thread" and City of Austin 4 inch (102 mm) Fire Hose Connection Standard (Available upon request from the Austin Water Utility's Standards Committee Chairperson at 972-0204).

Replace With: NFPA 1963: "National (American) Standard Fire Hose Coupling Screw Thread" and City of San Marcos 4 1/2 inch (114 mm) Fire Hose Connection Standard.

511S.3.E(2) Functional Requirements

Modify the fourth paragraph as indicated below:

Delete: Hydrant Main Valve shall be 5 1/4 inch (133 mm) I.D. Valve stem design shall meet requirements of AWWA C502, with Operating Nut turning clockwise to close. Operating Nut shall be pentagonal, 1 1/2 inch (38 mm) point to flat at base, and 1 7/16 inches (36.5 mm) at top and 1 inch (25 mm) minimum height. Seat ring shall be bronze (bronze to bronze threading), and shall be removable with lightweight stem wrench. Valve mechanisms shall be flushed with each operation of valve; there shall be a minimum of two (2) drain ports.

Replace With: Outlet Nozzles shall be located approximately 18 inches (450 mm) above ground. Each hydrant shall have two (2) 2 1/2 inch (63.5 mm) nozzles 180 degrees apart with National (American) Standard Fire Hose Coupling Screw Thread NFPA 1963 and one (1) 4 1/2 inch (114 mm) pumper nozzle with national standard thread—four (4) threads per inch (25 mm). Nozzles shall be threaded or cam-locked, O-ring sealed, and shall have type 302 or 304 stainless steel locking devices. Nozzle caps (without chains) and cap gaskets shall be furnished on the hydrant. The cap nut shall have the same configuration as the operating nut.

Modify the eighth paragraph as indicated below:

Delete: A blue Type II-B-B reflectorized pavement marker, conforming to Standard Specification Item No. 863S, shall be placed 2 to 3 feet (0.6 to 0.9 meters) offset from the centerline of paved streets, on the side of and in line with, all newly installed fire hydrants.

Replace With A blue Type II-B-B reflectorized pavement marker, conforming to Standard Specification Item No. 863S, shall be placed in the roadway 6” to 10” off center of the road way towards the hydrant, on the side of and in line with, all newly installed fire hydrants.

511S.3.I Fire Hydrant Marker Flag

Add the following:

Fire hydrants in rural areas shall have a marker flag installed. The flag shall include the following:

1. Minimum of 5’ tall.
2. Minimum thickness of 3/8”
3. Reflective sheeting on marker or reflective flag
4. Spring connecting bracket to marker

511S.4.B Setting Fire Hydrants

Modify the third paragraph as indicated below:

Delete: All hydrants shall stand plumb; those near curbs shall have the 4-inch (102 mm) nozzle facing the curb and perpendicular to it. The hydrant bury mark shall be located at ground or other finish grade; nozzles of all new hydrants shall be approximately 18 inches (450 mm) above grade. Lower barrel length shall not exceed 5 feet (1.5 meters). Barrel extensions are not permitted unless approved by the Engineer or designated representative. Each hydrant shall be connected to the main by 6-inch (152 mm) ductile iron pipe; a 6-inch (152 mm) gate valve shall be installed in the line for individual shutoff of each new hydrant.

Replace With: All hydrants shall stand plumb; those near curbs shall have the 4 1/2-inch (114 mm) nozzle facing the curb and perpendicular to it. The hydrant bury mark shall be located at ground or other finish grade; nozzles of all new hydrants shall be approximately 18” to 24” from the center of the lowest connection to the finished grade. Lower barrel length shall not exceed 5 feet (1.5 meters). Barrel extensions are not

permitted unless approved by the Engineer or designated representative. Each hydrant shall be connected to the main by 6-inch (152 mm) ductile iron pipe; a 6-inch (152 mm) gate valve shall be installed in the line for individual shutoff of each new hydrant.

511S.4.E Protective Coverings

Replace with the following:

Unless otherwise indicated, all flanges, nuts, bolts, threaded outlets and all other steel component shall be coal tar coated (or a manufactures approved anti-seize compound such as KORP-KOTE) and shall be wrapped with standard minimum 8-mil (0.2 mm) low density polyethylene film meeting ANSI/AWWA Specification C-105-current, with all edges and laps taped securely with 10-mil PVC tape to provide a continuous and watertight wrap. Repair all punctures of the polyethylene, including those caused in the placement of bedding aggregates, with 10-mil PVC tape to restore the continuous protective wrap before backfilling. For reclaimed water piping, the polyethylene shall be purple. Duct tape will not be allowed.

511S.4.K Abandoning Existing Utilities (*Add New Section*)

1. Gate Valves

All gate valves connected to an abandoned water main shall be abandoned by removing the top 6" of the valve box and filling the valve box with concrete (packaged concrete is acceptable). The surface shall be restore to match existing conditions, this includes but is not limited to asphalt, concrete or sod. This work shall be subsidiary to the pipe installation.

2. Fire Hydrants

All fire hydrants connected to an abandoned water main shall be abandoned by cutting the fire hydrant 6" below the ground and filling with concrete. The surface shall be restore to match existing conditions, this includes but is not limited to asphalt, concrete or sod. This work shall be subsidiary to the pipe installation.

All abandoned fire hydrants shall be delivered by the Contractor to a yard located at 630 E. Hopkins, San Marcos, Texas; unless otherwise indicated by the Inspector.

511S.5 Measurement

Delated in its entirety and replace with the following:

- A. Valves:** Measured per each. Unit price includes all depths.
- B. Fire Hydrant with 6-in Gate Valve:** Measured per each. Unit price includes fire hydrant, pipe, fittings, 6-in gate valve and all bury depths.
- C. Pressure or Flow Control Valve Assemblies:** Measured per each.
- D. Drain Valve Assemblies:** Measured per each.

- E. Manual Air Release Assemblies:** No longer Allowed
- F. Automatic Combination Air/Vacuum Release Valve Assembly:** Measured per each.
- G. Additional Bury Depth:** No payment will be made for additional bury depth; this work is subsidiary to pertinent items.
- H. Fire Hydrant Barrel Extensions:** No payment will be made for additional extensions; this work is subsidiary to Fire Hydrant payment.
- I. Reflectorized Pavement Markers:** No payment will be made for Reflectorized Pavement Markers; this work is subsidiary to Fire Hydrant payment.
- J. Permanent Disinfection Water Sample Port:** Measured per each.
- K. Temporary Disinfection Water Sample Port:** No payment will be made for Temporary Disinfection Water Sample Port; this work is subsidiary to water pipe payment.
- L. Existing Fire Hydrant Relocation:** Measured per each. Unit price includes all depths.

511S.6. Payment

Deleted in its entirety and replace with the following:

Payment shall include full compensation, in accordance with the pay item established in the bid, for excavation, furnishing, hauling and placing appurtenances, and all incidental materials and work; preparing, shaping, dewatering, bedding, placing and compacting backfill materials and for all other incidentals necessary to complete the installation, as indicated in the Drawings, complete in place.

No separate payment shall be made for trench protection; it shall be subsidiary to the pertinent items.

- A. Valves:** Valves will be paid for at the unit bid price for the size and type valve installed, including valve stem casing and cover, valve extensions, excavation and backfill, setting, adjusting to grade, anchoring in place, concrete riser collar and other appurtenances necessary for proper operation. Unit price includes all depths.

- B. Fire Hydrant with 6-in Gate Valve:** Payment included in following bid pay items shall include: excavation, backfill, selected material, hauling and disposition of surplus excavated materials, backfill, fire hydrant per detail, 6-in gate valve per detail, branch line pipe, nipples, and fittings exclusive of the tee from the main line pipe, polyethylene sleeve where required, joint restraints, concrete pad, restoration of existing fire hydrant sites and removal and relocation of existing fire hydrant as specified.
- C. Pressure or Flow Control Valve Assemblies:** Pressure control and flow control valve assemblies will be paid for at the unit bid price, including box or vault, setting, adjusting to grade, anchoring in place, adjusting the control device to the required conditions, providing other appurtenances necessary for proper operation, and placing in operation.
- D. Drain Valve Assemblies:** Drain valve installation shall be paid for at the unit bid price, which includes all necessary labor and materials to set, adjust to grade and anchor the bends, vertical piping, blind flange, joint restraint devices, concrete blocking, concrete pad, and other appurtenances necessary for proper operation; but shall not include pipe and valve between the main line and drain valve buried bend.
- E. Manual Air Release Assemblies:** No longer Allowed
- F. Automatic Combination Air/Vacuum Release Valve Assembly:**
Automatic air-vacuum release assemblies will be paid for at the unit bid price and will include the main line tap or outlet, all pipe, valves, fittings, box or vault and cover, and other appurtenances necessary for proper operation.
- G. Additional Bury Depth:** No payment will be made for additional bury depth; this work is subsidiary to pertinent items.
- H. Fire Hydrant Barrel Extensions:** No payment will be made for additional extensions; this work is subsidiary to Fire Hydrant payment.
- I. Reflectorized Pavement Markers:** No payment will be made for Reflectorized Pavement Markers; this work is subsidiary to Fire Hydrant payment.
- J. Permanent Disinfection Water Sample Port:** Permanent Disinfection Water Sample Port will be paid for at the unit bid price and will include the main line tap or outlet, all pipe, valves, fittings, box or vault and cover, and other appurtenances necessary for proper operation.

K. Temporary Disinfection Water Sample Port: No payment will be made for Temporary Disinfection Water Sample Port; this work is subsidiary to water pipe payment.

L. Existing Fire Hydrant Relocation: Existing Fire Hydrant Relocation shall include relocating an existing fire hydrant to a new location as specified in the contract documents and as specified herein. Restoration of the existing fire hydrant site shall be inclusive to this line item. Payment included in following bid pay items shall include: excavation, backfill, selected material, hauling and disposition of surplus excavated materials, backfill, adjusting existing 6-in gate valve per detail, additional branch line pipe, barrel extensions, nipples, polyethylene sleeve where required, joint restraints, concrete pad, and restoration of existing fire hydrant sites.

M. Adjust Existing Valve Box: *See 504S Adjusting Structures.*

Payment, when included as a contract pay item, will be made under one of the following:

511S-A:	Valves, _____ Type, _____ Diameter	Per Each.
511S-B:	Fire Hydrant with 6-in Gate Valve	Per Each.
511S- C:	Pressure or Flow Control Valve Assemblies	Per Each.
511S- D:	Drain Valve Assemblies	Per Each.
511S- E:	<Reserved>	
511S- F:	Automatic Combination Air/Vacuum Release Valve Assembly, _____ Diameter.	Per Each
511S- G:	<Reserved>	
511S-H:	<Reserved>	
511S-I:	<Reserved>	
511S- J:	Permanent Disinfection Water Sample Port	Per Each
511S- K:	<Reserved>	
511S- L:	Existing Fire Hydrant Relocation	Per Each

Item No. 591S Riprap for Slope Protection

591S.1 Description

Add the following:

If called out on the plans, all decorative concrete riprap shall include stamp patterns and colors selected by the City.

591S.2 Submittals

Add the following:

Provide stamp pattern product data and installation guide for Integral Color application.

Product data for color, release agent and clear seal.

Prepare a 9 square foot sample of pattern and color for approval prior to installation.

591S.3 Materials

Add the following:

M. Color

Color shall be Integral Color application which are mixed in directly with the concrete truck.

N. Release Agent

Release Agent shall be required and the color must be approved by the City.

O. Clear Seal

Clear seal shall be required and installed per manufacturer's recommendation.

591S.4.C Concrete Riprap

Add the following:

Coloring, stamping, and sealing of stamped concrete shall be installed per the per manufacturer's recommendation. Integral color method shall be used for coloring concrete.

591S.5 Measurement

Add the following:

Stamp pattern, color, release agent, and clear seal will not be measured for separately. Each item will be included in the unit price bid for the bid item *Decorative Concrete Riprap*.

591S.6 Payment

Add the following:

Stamp pattern, color, release agent, and clear seal will not be paid for separately. Each item will be included in the unit price bid for the bid item *Decorative Concrete Riprap*.

Pay Item No. 591S-F-D: Decorative Concrete Riprap, ___ In. **Per Square Yard**

Pay Item No. 591S-G-D: Decorative Concrete Riprap **Per Cubic Yard**

Item No. 604S Seeding For Erosion Control

604S.4 Construction Method

Delated the last 2 paragraphs and replace with the following:

The use of potable water will be restricted as stated in City of San Marcos Land Development Code Chapter 86, Article 2 Division 2. Water Conservation.

604S.6 Native Grass Seeding

Add the following to Table 3: Native Wildflowers:

Common Name	Botanical Name	Application Rates
		lbs/1000ft ²
Antelope horns	<i>Asclepias asperula</i>	0.003
Green milkweed	<i>Asclepias viridis</i>	0.003

Item No. 605S Soil Retention Blanket

605S.3.A Soil Retention Blankets (Materials)

Add the following:

For Class 1 protection on slopes that are 3H:1V or flatter, only biodegradable fabrics with no plastic netting are allowed.

Item No. 609S Native Grassland Seeding and Planting for Erosion Control

609S.4.A General (Table 1: Weed List)

Delete Table 1: Weed List and replace with the following:

Weed Type	Botanical Name	Common Name
-----------	----------------	-------------

Summer Annual Herb	<i>Ambrosia spp.</i>	Ragweed
Perennial Grass	<i>Bothriochloa ischaemum</i>	K.R. Bluestem
Annual Grass	<i>Cenchrus spp.</i>	Sandbur
Herb	<i>Cnidocolus texanus</i>	Bull Nettle
Perennial Grass	<i>Sorghum halapense</i>	Johnson Grass
Perennial Grass	<i>Arundo donax</i>	Giant Cane
Perennial Grass	<i>Phllostachys aurea</i>	Golden Bamboo
Vine	<i>Toxicodendron radicans</i>	Poison Ivy
Herb	<i>Urtica spp.</i>	Stinging Nettle
Winter Annual Herb	<i>Rapistrum rugosum</i>	Bastard Cabbage
Winter Annual Grass	<i>Bromus arvensis</i>	Japanese Brome
Winter Annual Grass	<i>Lolium multiflorum</i>	Annual Ryegrass
Tree	<i>Triadica sebifera</i>	Chinese Tallow
Tree	<i>Ligustrum sp.</i>	Privet
Tree	<i>Melia azedarach</i>	Chinaberry
Tree	<i>Lonicera japonica</i>	Japanese Honeysuckle
Shrub	<i>Nandina domestica</i>	Heavenly Bamboo
Shrub	<i>Photinia sp.</i>	Photinia

Item No. 610S Preservations of Trees and Other Vegetation

610S.1 Description and Definitions

Add the following:

This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

All pruning shall be performed under the direct supervision of a certified arborist provided by the contractor as indicated below.

- The requirement for a certified arborist will be waived on private jobs that have been reviewed and approved permit through *MyPermitNow*.
- A certified arborist must be provided by the contractor on all projects that are not permitted through *MyPermitNow*. This will not be paid for separately, but will be considered subsidiary to the overall project cost.

The Contractor will not begin any utility or street excavation work where tree preservation and treatment measures have not been completed and approved.

Modify the definition of a City Arborist as indicated below:

Delete: City official designated by the Director of the Planning and Development Review Department (Land Development Code 25-8-603) or as designated by the City Arborist.

Replace With: Person designated as such by the Director of Engineering and Capital Improvement or as designated by the City Urban Forester.

Modify the definition of a Qualified Arborist as indicated below:

Delete: an individual engaged in the profession of arboriculture or closely related field

who, through experience, education, and related training, possesses the competence to provide for, or supervise, the management of trees and other woody plants (as defined in the most current version of ANSI A300 (Part 1)-2001, section 4.1).

Replace With: Certified arborist retained by a Contractor for the purpose of overseeing on-site activity involving the welfare of trees to be retained. The Qualified Arborist shall be responsible for all reports, appraisals, tree preservation plans, or inspections as required. The contractor shall provide an (ISA) International Society of Arboriculture Certified Arborist that has a minimum of five years' experience who will serve in the roles described in the specification as the responsibilities of the City Arborist.

Add the following Definitions:

Critical Root Zone (CRZ) – See definition below for *Root Protection Zone (RPZ)*.

Excessive Pruning – removal of the trees foliage & branches that exceeds approximately 25% or more of the trees canopy. The City Arborist shall have the final decision on determining excessive pruning.

Protective Tree Fencing – A temporary enclosure erected around a tree to be protected at the boundary of the tree root protection zone. The fence serves three primary functions:

- 1) To keep the foliage crown, branch structure and trunk clear from direct contact and damage by equipment, materials or disturbances
- 2) To preserve roots and soil in an intact and non-compacted state
- 3) To identify the tree protective zone in which no soil disturbance is permitted and activities are restricted.

Root Protection Zone (RPZ) - The area within a “X” distance from the tree, starting from the perimeter of the tree trunk. It is determined by measuring the tree at 54 inches above natural grade, where for every 1 inch of the trees diameter equals 1 foot radius. This area does not necessarily have to be centered exactly on the tree trunk and can overlap with groups of trees. The City Arborist retains the right to extend or modify the RPZ at any time.

Example: A 12 inch diameter tree measured at 54 inches would have a 12 foot radial area of protection or a 24 foot diameter root protection zone.

Removal –mean any of the following:

1. Complete tree removal such as cutting to the ground or extraction of the tree.
2. Taking any action foreseeable leading to the death of a tree or permanent damage to its health or structural integrity; including but not limited to excessive pruning, cutting, girdling, poisoning, over watering, trenching, excavation, altering the grade, or paving within the root protection zone of the tree.

Topping - The severe cutting back of limbs to stubs larger than three inches in diameter within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree.

610S.2 Submittals

Add the following:

F. Proposed other tree health improvements not limited to watering, integrated pest management, and soil aeration.

610S.3.A Protective Fencing and Signage

Delete and Replace with the following:

Protective fencing is designated as the materials used to protect the root zones of trees as illustrated in City of San Marcos Standard Detail 610S-1-SM. Type A shall be installed where damage potential to a tree root system is high. Type B and Type C are not allowed.

610S.3.A (4) Signage

Delete and Replace with the following:

A laminated sign, no smaller than 8.5" X 11", shall be posted on each tree protective device, and at least every 50 linear feet on protective fencing, identifying the following information: "Keep Out, Tree Protection Area". This protective device is to remain in place for the entirety of the construction project and illegal removal is subject to fines and work suspensions. Additional information can be obtained from the City Arborist (512-393-8486).

610S.3.C Tree Dressing

Delete and Replace with the following:

Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease prevention and control such as of oak wilt adhere to the Texasoakwilt.org. Pruning guidelines (see section 610S.4 (H)), insect, mistletoe, or sprout control (most recent version of ANSI A300 Pruning standards)

610S.3.G Board Pads (Add New Section)

Board pads made either of wood or metal that are placed over areas where the Tree's root protection zone fencing has been offset to provide access for heavy equipment, roads or building work. Minimum board thickness of plywood sheeting for high use areas within the CRZ is ¾" thick with 2x4 wood attached to secure any overlapping sheeting. See standard detail for further information. The area shall be mulched with 8-12 inches of mulch; board pads shall be located to overlap to prevent heavy machinery from displacing mulch and impacting the soil and trees roots in the root protection zone.

610S.3.H Water (Add New Section)

Reclaimed reuse water is acceptable when tested for sodium content and approved by the City Arborist and or potable water.

610S.4.A.2 (c) Protective Fencing

Modify the last sentence as indicated below:

Delete: Apply organic mulch to a depth of 8 inches [30.48 cm] in the unprotected root zone area;

Replace With: Apply organic mulch to a depth of 8 inches to 12 inches in the unprotected root zone area and add board pads located over the mulched area to prevent mulch from being displaced;

610S.4.B Pruning and Repair of Damage

Add the following:

Prior to the start of construction the Contractor shall schedule an on-site meeting with the City Inspector and the Contracts' Certified Arborist to:

1. Identify tree pruning needs for minimum overhead clearance to perform the work.
2. Identify any hazardous tree conditions that may need repair for site safety.
3. Identify areas where exhaust diverters will be required to prevent scorching of trees.

Contractor shall provide a representative who is familiar with the type of equipment that will be used on the project and the arborist that will be performing or supervising all tree work. Tree work must be performed under the direct supervision of a Certified Arborist and shall be in accordance with the current adopted industry standards (ANSI A300 and ANSI Z133, and Best Management Practices).

The Contractor is responsible to protect preserved trees against injury or damage, including cutting, soil compaction, and breaking or skinning of roots.

At the end of the day the Contractor will cover exposed roots using soil, mulch or wet burlap.

Modify the third paragraph as indicated below:

Delete: Trees damaged or removed without prior approval or where minimum design criteria is exceeded due to failure to maintain approved tree protection shall be mitigated (Environmental Criteria Manual section 3.5.4, "Mitigation Measures") in accordance with Land Development Code Chapter 25-8, Subchapter B, Article 1.

Replace With: Trees damaged or lost due to the Contractor's negligence during construction shall be mitigated to the City's satisfaction and in accordance with section 5.5.2.2 "Tree Protection Standards" of the land development code.

610S.4.E Tree Removal

Delete the first paragraph and replace with the following:

Tree removal shall comply with Chapter 6 of the Land Development Code. Trees 9 inches in diameter and greater are defined as protected trees and require specific review from the City Arborist to approve a permit or site plan for removal. The removal of any protected or heritage tree for the purpose of development without City approval is expressly prohibited.

610S.4.G Root Zone Aeration and Fertilization

Modify the last sentence of the second paragraph as indicated below:

Delete: Treatment should include, but not limited to, fertilization, soil treatment, mulching, and proper pruning.

Replace With: Treatment should include, but not limited to, fertilization, integrated pest management, soil aeration treatment, mulching, and proper pruning.

Add the following to the end of this section:

The Contractor will protect all existing landscape and trees from a change in the soil ph factor by preventing the disposal of lime based materials such as concrete, plaster, or lime treatment at the pavement subgrade in the proximity of preserved tree areas.

610S.4.H.3 (c) Prevention Policy

Add the following to the end of this section:

All wounds shall be treated with paint within 20 minutes of pruning, wounding or injury.

610S.4.H.4 (b) Disposal Policy

Add the following:

Burning diseased wood must occur on-site, if outside the City Limits.

610S.4.H.4 (c) Disposal Policy

Replace with the following:

Logs from diseased Red Oaks, that are not chipped, shredded, or burned shall wrapped immediately in clear plastic to be disposed of at a landfill.

610S.5 Measurement

Modify the first sentence of the first paragraph as indicated below:

Delete: Tree and shrub pruning, fencing, drains, fertilization, etc. will not be measured for payment unless included as a contract pay item.

Replace With: Tree and shrub pruning, fencing, drains, integrated pest management, watering, soil aeration treatment, fertilization, etc. will not be measured for payment unless included as a contract pay item.

Item No. 648S Mulch Sock

648S.4 Installation

Delete all sub-sections and replace with the following:

Install mulch socks per COSM Detail 648S-1-SM.

Install the mulch socks per the size specified. If a size is not specified, a 12” mulch sock shall be used.

648S.6 Payment

Add the following:

If a size is not specified, a 12” mulch sock shall be used.

Pay Item No. 648S-6:	Mulch Sock, 6” Dia	Per Lineal Foot.
Pay Item No. 648S-8:	Mulch Sock, 8” Dia	Per Lineal Foot.
Pay Item No. 648S-12:	Mulch Sock, 12” Dia	Per Lineal Foot.

Pay Item No. 648S-18:

Mulch Sock, 18" Dia

Per Lineal Foot.

Item No. 700S Mobilization

700S.3 Payment

Modify the fourth sentence of the first paragraph as indicated below:

Delete:

"Initial Mobilization Payout" as used below is defined as:

1. 8% of the original contract amount for projects with an original contract amount of \$ 0.5 million or less; or
2. 4% of the original contract amount for projects with an original contract amount greater than \$ 0.5 million.

In those instances where the "Initial Mobilization Payout", as defined above, exceeds the "Total Mobilization Payment" lump sum bid item (i.e. Payment Item No. 700STM), the "Total Mobilization Payment" shall be used as the "Initial Mobilization Payout". In no instance shall the "Initial Mobilization Payout" exceed the "Total Mobilization Payment" bid item.

Replace With:

- "Total Mobilization Payment" (TMP) is the lump sum amount bid by the contractor.
- "Initial Mobilization Payout" (IMP) is the value used to make partial payments to the contractor. The value will be determined using equations below:
 1. For project where the **original contract \leq \$ 0.5 million or less;**
 - a. If the TMP bid $<$ 8% of the original contract amount
 - i. $IMP = TMP$
 - b. If the TMP bid \geq 8% of the original contract amount
 - i. $IMP = 8\%$ of the original contract amount
 - ii. Anything over 8% of the original contract amount will be paid for at the end of construction per 700S.3.F
 2. For project where the **original contract $>$ \$ 0.5 million;**
 - a. If the TMP bid $<$ 4% of the original contract amount
 - i. $IMP = TMP$
 - b. If the TMP bid \geq 4% of the original contract amount
 - i. $IMP = 4\%$ of the original contract amount
 - ii. Anything over 4% of the original contract amount will be paid for at the end of construction per 700S.3.F

Item No. 701S Fencing

701S.5.G Adjustments Of Gates (*Add New Section*)

For driveways with penetrations and vehicular gates, Contractor shall adjust fence so there is no gap between the bottom of the fence adjacent to the driveway and the ground once the driveway.

Item No. 803S Barricades, Signs and Traffic Handling

803S.1 Description

Add the following:

Should the Contractor desire to propose a detour, not already included in the traffic control plan, it shall be his responsibility to prepare a revised traffic control plan showing the detour, and obtain approval. The Contractor shall bear all costs for revising the traffic control plan and for maintaining the proposed detour.

803S.5 Maintenance

Add the following:

As work progresses, the Contractor may be requested to adjust the location of temporary traffic control devices, as necessary by the City at Contractor's expense.

803S.6 Measurement

Add the following:

If the need arises, additional temporary traffic control devices, special directional devices, and/or business name signs may be ordered by the Public Services Transportation Division at the Contractor's expense.

Off-duty police officers may be required at no additional cost to the City.

Item No. 871S Reflectorized Pavement Markings

871S.1 Description

Add the following:

Type II markings are not to be used for permanent markings. Type II must be used as temporary markings and a sealer until the road material is ready to accept Type I markings per this specification.

871S.4.A General (Construction Methods)

Add the following:

All striping shall consist of both Type I (thermoplastic) and Type II (paint) markings. Type II shall not be considered a permanent pavement marking. It shall be considered a sealer for Type I pavement markings.

Temporary pavement markings shall be installed when Type II pavement markings cannot be installed prior to opening the road to traffic. Temporary pavement markings will not be measured or paid for directly but shall be included in the unit price bid for Standard Specification Item No. 340S, "Hot Mix Asphaltic Concrete Pavement".

871S.4.C Application of Type I Markings (Construction Methods)

Modify the fourth sentences of the first paragraph as indicated below:

Delete: Type II markings shall be placed a minimum of 2 and a maximum of 30 calendar days in advance of placing Type I markings.

Replace With: Apply markings on pavement that is completely dry. There are two options to determine if the pavement is ready accept Type I pavement markings:

1. **Without Testing**, all three (3) of the following conditions must be satisfied:

- a) Type II markings shall be placed a minimum of 72 hours and a maximum of 30 calendar days in advance of placing Type I markings.
- b) The Type II markings placement has been approved by the City's Engineer or Inspector.
- c) HMAC or Concrete has cured for 14 calendar days

2. **With Testing**, both of the following conditions must be satisfied:

- a) Place a sample of Type I marking material on a piece of tarpaper placed on the pavement. Allow the material to cool to ambient temperature, and then inspect the underside of the tarpaper in contact with the pavement. Pavement will be considered dry if there is no condensation on the tarpaper.
- b) The Type II markings placement has been approved by the City's Engineer or Inspector.

871S.4.D Application of Type II Markings (Construction Methods)

Add the following:

Apply markings on pavement that is completely dry. There are two options to determine if the pavement is ready accept Type II pavement markings:

1. **Without Testing**: Type II pavement markings shall not be placed sooner than 4 hours after the placement of a new hot mix asphaltic concrete surface course or surface treatment.

2. **Without Testing**: Place a 1-sq. ft. piece of clear plastic on the pavement, and weight down the edges. The pavement is considered dry if, when inspected after 15 min., no condensation has occurred on the underside of the plastic.

Texas Department of Transportation Adopted Specifications

The City of San Marcos has adopted a select number of TXDOT Specifications and modified them to fit the needs to the City of San Marcos. The adopted specifications can be found here:

City of San Marcos Adopted Specifications: <http://www.sanmarcostx.gov/index.aspx?page=1231>

All adopted specifications will say “City of San Marcos Adopted” in the top left corner of the specification. Verbiage that does not apply to City of San Marcos projects has been stricken through. If additional information has been added to the spec, there is a note that says “*See Modifications for additional information.” This document contains the additional information. Department shall be replaced with City of San Marcos throughout the specifications.

City Of San Marcos Adopted 03/09/2016		334
Item 334		
Hot-Mix Cold-Laid Asphalt Concrete Pavement		
1.	DESCRIPTION	
	Construct a cold-laid pavement layer composed of a compacted mixture of aggregate and asphalt material mixed hot in a mixing plant.	
	This Item governs mixtures designed for cold placement, defined as placement temperatures below 175°F. If the mixture placement temperature is greater than 175°F, then design, produce, place, and compact the mixture in accordance with the applicable hot-mix asphalt specification.	

Figure 2: Example from Adopted Specifications

All cross-references within the TXDOT specification shall be understood to reference TXDOT specifications; and not COA specifications. All TXDOT specification cross-referenced in this specification shall be considered adopted by the City of San Marcos even though that are not included in the specification book. A pdf of the 2014 TxDOT Standard Specifications can be found on the TXDOT website.

<ftp://ftp.dot.state.tx.us/pub/txdot-info/des/spec-book-1114.pdf>

If any details or specifications have errors or need revision/clarification, please send your comments to:

[Capital Imp Info@sanmarcostx.gov](mailto:Capital_Imp_Info@sanmarcostx.gov)

Or call 512.393.8130.

Item No. 193 Landscape Establishment

193.5 Payment

Add The Following:

Payment for Work meeting these specifications will be made under one of the following:

Pay Item No. TXDOT 193-6001 Plant Maintenance Month	Per
Pay Item No. TXDOT 193-6002 Plant Maintenance	Per Cycle
Pay Item No. TXDOT 193-6003 Plant Replacement (1 Gallon)	Per Each
Pay Item No. TXDOT 193-6004 Plant Replacement (3 Gallon)	Per Each
Pay Item No. TXDOT 193-6005 Plant Replacement (5 Gallon)	Per Each
Pay Item No. TXDOT 193-6006 Vegetative Watering	Per MG
Pay Item No. TXDOT 193-6007 Irrigation System Operation and Maintenance	Per MO
Pay Item No. TXDOT 193-6010 Plant Replacement (_____ Type)	Per Each

Item No. 334 Hot Mix Cold-Laid Concrete Pavement

334.4.8 Ride Quality

Replace With The Following:

Ride Quality test will not be required.

334.5 Measurement

Replace With The Following:

Work performed and material placed shall be measured under one of the following methods. When Drawing quantity measurement is specified, adjustment of quantity may be made as follows. If the quantity measured as outlined vary from those shown on the Drawings by more than 5%, either party to the Contract may request in writing and adjustment of the quantity by each separate bid item. The party to the Contract which requests the adjustment shall present to the other party one copy of measurements and calculations showing the revised quantity in question. This revised quantity, when approved by the Engineer or designated representative, shall constitute the final quantity for which payment will be made. However, no adjustment will be made for any quantity, which exceeds the Drawing required thickness.

Method A: Asphaltic concrete pavement shall be measured by the ton (2,000 pounds) of the

type actually used in completed and accepted Work in accordance with the Drawings and specifications.

The measurement shall be made on approved truck scales that meet the requirements of the National Institute of Standards and Technology Handbooks 44 and 112 except that the required accuracy shall be 0.4 percent of the load being weighed. The Contractor shall furnish a report of calibration from a scale mechanic licensed by the Texas Department of Agriculture certifying that the scales meet this requirement.

Method B: Asphaltic concrete pavement shall be measured by the square yard of specified total thickness of the type of paving mixture actually used in completed and accepted Work in accordance with Drawings and specifications. Multiple lifts of the same type shall be considered as one for square yard measurement purposes.

Method C: Asphaltic concrete pavement shall be measured by the lineal foot of specified total thickness of the type of paving mixture actually used in completed and accepted Work in accordance with Drawings and specifications. Multiple lifts of the same type shall be considered as one for linear foot measurement purposes.

334.6 Payment

Replace With The Following:

Work performed and materials furnished as prescribed by this item and measured as provided under "Measurement" will be paid for at the unit bid prices or pay adjusted unit price for Hot Mix

Asphaltic Concrete Pavement, of the types and thicknesses specified. The unit bid prices shall include full compensation for furnishing all labor, equipment, time, materials and incidentals necessary to complete the Work.

Removal of existing hot mix asphalt concrete transition areas prior to overlay, tack coat, saw cutting and temporary pavement markings will not be measured or paid for directly but shall be included in the unit price bid for Standard Specification Item No. 340S, "Hot Mix Asphaltic Concrete Pavement".

Payment for Work meeting these specifications will be made under one of the following:

Pay Item No. TXDOT 334-A:

Hot Mix Cold Laid Asphaltic Concrete Pavement, Type _____, **Per Ton.**

Pay Item No. TXDOT 334-B:

Hot Mix Cold Laid Asphaltic Concrete Pavement, ___Inches, **Per Square Yard.**
Type _____,

Pay Item No. TXDOT 334-C:

Hot Mix Cold Laid Asphaltic Concrete Pavement, ___Inches, **Per Lineal Foot.**
Type _____,

Pay Item No. TXDOT 334-PQ:

Hot Mix Cold Laid Asphaltic Concrete Pavement, ___Inches, **Per Ton**
Type _____, Plan Quantity,

Item No. 680 Highway Traffic Signals

680.2 Materials

Add The Following:

Refer to the City of San Marcos Engineering webpage for approved Traffic Signal Materials. Any materials that are listed on the COSM SPL list shall be used prior to using a TXDOT approved material.

<http://www.sanmarcostx.gov/379/City-of-San-Marcos-Standard-Product-List>

680.3.1.8 Test Period

Modify the third sentences of the second paragraph as indicated below:

Delete: The Department will relieve the Contractor of maintenance responsibilities upon passing a 30-day performance test of the signal system and acceptance of the Contract.

Replace With: The City will relieve the Contractor of maintenance responsibilities once both of the following conditions are met:

1. Upon passing a 30-day performance test of the signal system
2. City issues the Certificate of Acceptance to the Contractor

680.3.3 Control of Signals (*Add New Section*)

Add The Following:

Provided a 14 day advanced email notice to the City Project Manager with the signal technician contact information prior to assuming maintenance and operation of the illumination and signals.

The Contractor will be responsible for all maintenance, programming, and operation of the signals once the Notice to Proceed is issued. This includes, but is not limited to, emergency calls for signals not working, programming the new signals, adjusting the timing and phases for each phase of construction, adjusting video detection and signal heads. The contractor is required to have a manufacture representative when new programming is occurring. The City of San Marcos staff will not be responsible for troubleshooting any issues during construction. All the above tasks are subsidiary to the Traffic Signals work.

680.5 Payment

Add The Following:

Pay Item No. TXDOT 680-8002 Install HWY TRF SIG (Isolated) **Per EA**

Pay Item No. TXDOT 680-8004 Removing Traffic Signals **Per EA**