

2021 Modifications to the City of Austin & TXDOT Standard Specifications



City of San Marcos

January 1, 2021

These modifications apply to all projects constructed within the City of San Marcos city limits or service area that use the City of Austin (COA) and the Texas Department for Transportation (TXDOT) Standard Specifications for construction.

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".

From time to time, it may become necessary to update, change, or modify these specifications. When this happens, the latest version of these modifications will prevail. The latest version's date will be displayed prominently on the front page and within the headers of each page.

If there are any questions, errors, disputes, suggestions for improvement, or other modifications with this document, please contact the City Of San Marcos Engineering Department.

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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.

Item No. 210 Flexible Base

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)

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

Replace With: ASTM C260

402S.11 Payment

Delete Pay Items and replace with the following

402S-B:	Controlled Low Strength Material - Base	Per Cubic Yard
402S-F-NS:	Controlled Low Strength Material - Fill (Normal Set)	Per Cubic Yard
402S-F-FS:	Controlled Low Strength Material - Fill (Fast Set)	Per Cubic Yard

402S.12 Quality Assurance for Volumetric Concrete (*Add New Section*)

Add the following:

- A. Experience Requirements of Volumetric Concrete Supplier. Documentation shall be submitted if requested by the City.
 - 1. A minimum of ten years of experience in the supply including batching and placing of concrete with Volumetric Mixer Trucks
 - 2. The supply including batching and placing shall consist of a minimum five (5) concrete projects of the general type and size as required for this project with Volumetric Mixer Trucks, all satisfactorily completed in the last three (3) years.

- B. Source Quality Control of Volumetric Concrete Supplier. Documentation shall be submitted if requested by the City.
 - 1. Provide historical test data that furnished mix designs meet Controlled Low Strength Material (CLSM) requirements.
 - 2. Quality Assurance documents shall be submitted that document that Volumetric Mixer Trucks conform to the following:
 - a. Shall be manufacturing per the Volumetric Mixer Manufacturers Bureau (VMMB) and display rating plates defining the capacity and the performance of the mixer truck.
 - b. Shall be in compliance with ASTM C685. All Volumetric Mixer Trucks delivering CLSM shall meet the uniformity and consistency requirements as indicated in ASTM C685 Annex 1 Concrete Uniformity Requirement or equivalent and be calibrated in general accordance with ASTM C685.
 - c. Shall have provided a satisfactory yield test within six (6) months.
 - d. Shall be in accordance with ACI 304R.
 - e. Mixer Operators shall have undergone training in accordance with the suppliers Quality Assurance Program.

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. 410S Concrete Structures

410S.25 Defective Work

Add the following:

All defective Work such as any type of cracking, bulging, uneven and honeycomb will be replaced, as determined by the Inspector. Replacement limits shall be from joint to joint.

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 eighth 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.

Add the following to the 2nd to last paragraph as indicated below:

Add: Temporary relocation of mailboxes is subsidiary to the work. Payment will be made for new mailboxes and assemblies that are required by the plans. Contractor shall verify with property owner if they would like discarded mailbox before removing mailbox.

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.7 Measurement

Add the following:

Mailboxes will be measured by each permanent mailbox assembly installed. No payment will be made for maintaining existing mailboxes at a temporary location or for re-installing existing mailboxes to pre-construction location.

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

Add the following Pay Items

432S-MB: Mailbox Per Each

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. 504S Adjusting Structures

504S.4 Construction Methods

Delete the fourth with the following:

Adjusting existing meter box involves the vertical adjustment of the existing meter box without affecting the water meter or fittings inside the meter box.

Relocating existing meter & meter box involves the vertical and/or horizontal relocation of the existing, meter box and fittings. The existing meter shall be installed per COSM standard details 520 series, and includes a new customer shut off valve and customer yard piping as required to make the connection from the new service to the existing service on the customer's side.

New meter box involves swapping out the existing meter box with a new COSM meter box as required by SPL WW-145A

504S.6 Payment

Add the following:

Pay Item No 504S-AWM	Adjusting Existing Meter Box	Per Each
Pay Item No 504S-RWM	Relocating Existing Meter & Meter Box	Per Each
Pay Item No 504S-NMB	New Meter Box	Per Each

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 precast 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.

Item No. 510 Pipe

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
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)(I) 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(12) Lines and Grades

Add the following:

All laser equipment shall be calibrated once every 12 months. Proof of calibration must be submitted to the inspector at their request.

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	ASTM C33 Size No. 67	ASTM C33 Size No. 57
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		<i>Gravel</i>		
<i>1" Copper or Polyethylene</i>	<i>Allowed</i>			
<i>2"-3" PVC Pipe</i>	<i>Allowed</i>	<i>Allowed</i>		
<i>All *Pipe 4" and Greater</i>			<i>Allowed</i>	<i>Allowed</i>

**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; expect 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 television inspection requirements for sanitary sewer mains shall follow the requirements listed in section **510.3(26)(g) Inspection of Installed Storm Drain Conduits.**

The contractor shall clean the sanitary sewer main no more than 24 hours prior to performing the television inspection. Video shall be continuous from manhole to manhole.

Contractor shall not place permanent pavement repairs or permanent pavement reconstruction over the sanitary sewer main until Owner has reviewed the video and agrees that there are no defects in the sanitary sewer main installation shown in the video submitted by the Contractor or shown in any video acquired by the Owner through other means. Placement of permanent pavement repair or permanent pavement reconstruction over the installed sanitary sewer main before the Owner acknowledges no defects shall be at the Contractor's risk. Any defects revealed by the video inspection shall be corrected at the Contractor's expense and a new video submitted to the Owner for review prior to acceptance of the sanitary sewer main. If the contractor must cut the final lift of pavement restoration to make this repair, the contractor must repair the pavement from curb to curb at his expense.

Television inspection is required for all installation sanitary sewer mains. Payment will be subsidiary to the installation of the pipe, unless a pay item for post TV inspection is included in the bid.

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(26)(h) Survey Verification (*Add New Section*)

The contractor shall provide survey data of all inverts at each installed manhole prior to making permanent pavement restoration above the sanitary sewer main. The survey data should include the following:

1. Manhole ID
2. Manhole Invert elevation with direction
3. Length of pipe between manholes
4. Calculated slope of pipe between manholes

Any installed sanitary sewer that does not meet TCEQ criteria shall be removed and replaced at the contractor's expense, unless the design engineer called for a slope that does not meet TCEQ criteria.

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 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 two paragraph as indicated below:

Delete: Video inspection of newly installed box culverts and storm drain pipe will be measured per linear foot of pipe videoed.

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

Replace With: When called for in Bid, Video Inspection of Stormwater Pipe or Sanitary Sewer Pipe will be measured per linear foot of pipe videoed.

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.

510.5.13 Video Inspection (Payment)

Delete and Replace with the following:

When called for in the Bid, Video Inspection of Stormwater Pipe or Sanitary Sewer Pipe will be paid at the unit price bid per linear foot and shall be full payment for all labor, equipment, and materials required for video inspection per this specification, including all submittals of CD/DVD as required.

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
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
510- VIDEO-WW	Video Inspection of Sanitary Sewer	Per LF
510- VIDEO-SD	Video Inspection of Storm Drain	Per LF

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>Phyllostachys 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 3/4" 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

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	Per Month
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**