CAMINO REAL
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AUTHORITY

AMENDMENT OF SOLICITATION

Zaragoza POE, Pan American Dr., & Winn Rd. Build/Improvements

The above titled solicitation is amended. **All amendments must be acknowledged on the "PROPOSAL"; failure to do so may be cause for rejection of bid.**

The date specified for receipt of offers is NOT extended:

Bid Date: October 16, 2018 @ 10:00 AM (MST)

Addendum No. 1

September 12, 2018

Contents:

Changes to Contract Documents

None.

Changes to General Notes

1. Remove Sheets 46 – 77, General Notes and replace with 46-A1 – 77-A1
    - Modified Item 110: Changed 100% compaction to 95%
    - Modified Item 247: Clarified preparation and compaction of subgrade to be subsidiary to this item. Payment limits to be measured as shown on plans.
    - Modified Item 247: Added note for compaction requirements.
    - Modified Item 351: Added note for compaction requirements.
    - Modified Item 529: Removed note for backfill material to be subsidiary to this item.
    - Modified Item 538: Added note for new monuments to be certified and sealed by a Professional surveyor licensed in the State of Texas.
    - Added note to General Requirements: "As-builts (Record) Drawing will be required."
    - Added note to Prosecution and Progress: "Liquidated Damages will be effective for each of the phase sequences and/or milestones if they are not completed during the allowed days indicated."
    - Added note to Prosecution and Progress: "No additional costs or delays will incur due to utility conflicts/adjustments."

Changes to Construction Plans

1. Remove Sheets 3 – 18, General Notes and replace with 3-A1 – 18-A1
    - Modified Item 110: Changed 100% compaction to 95%
    - Modified Item 247: Clarified preparation and compaction of subgrade to be subsidiary to this item. Payment limits to be measured as shown on plans.
    - Modified Item 247: Added note for compaction requirements
    - Modified Item 351: Added note for compaction requirements
    - Modified Item 529: Removed note for backfill material to be subsidiary to this item.
    - Modified Item 538: Added note for new monuments to be certified and sealed by a RPLS licensed in the State of Texas.
    - Added note to General Requirements: "As-builts (Record) Drawing will be required."
    - Added note to Prosecution and Progress: "Liquidated Damages will be effective for each of the phase sequences and/or milestones if they are not completed during the allowed days indicated."
    - Added note to Prosecution and Progress: "No additional costs or delays will incur due to utility conflicts/adjustments."
2. Remove Sheet 2, Index of Sheets and replace with 2-A1
    - Revised sheet numbering for Addendum
3. Remove Sheet 134, Miscellaneous Details and replace with 134-A1
    - Modified payment limits on Pavement Structure Detail.
4. Addition of Sheet 134A-A1, Miscellaneous Details
    - Addition of Commercial Driveway Detail
    - Addition of Sidewalk with Parkway Detail
5. Remove Sheet 238, Existing Utility Layout and replace with 238-A1
    - Addition of 6" high pressure gas line
6. Remove Sheet 239, Existing Utility Layout and replace with 239-A1
    - Addition of 6" high pressure gas line

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General Notes:

Tests to be in accordance with the Department's Standard Test Methods

Table 1
Compaction Requirements for Base Courses

Item	Description	Outside Roadway Course Density
132[1,2,3]	Embankment (Final)(Density Control) (TY A)	(See Below)

1. **To a depth of 6 in. below natural ground scarify and compact to a 95% minimum.**
2. **From natural ground to 24 in. below finished subgrade, 98% minimum compaction.**
3. **From 24 in. below finished subgrade to finished subgrade, 100% minimum compaction.**

Table 2
Basis of Estimate

Item	Description	Rate
310	Prime Coat (SS-1H)	0.20 gal./sq. yd.
341	Dense-Graded Hot-Mix Asphalt D-GR HMA TY-B PG64-22 D-GR HMA TY-D PG70-22 D-GR HMA TY-B PG70-22	 1.98 Tons/CY 1 in. = 110 #/SY

1. **Deviation from the rates shown will require approval.**

General Requirements

The project consists of new roadway facility, reconstruction and rehabilitation of existing roadway along Pan American Drive and Winn Road from State Loop 375 to Rio Del Norte Drive within the city limits of El Paso, TX.

Maintain the entire project area in a neat and orderly manner throughout the duration of the work. Remove all construction litter and undesirable vegetation within the right of way inside the project limits subsidiary to the various bid Items.

Become familiar with project site prior to submitting bids.

Where night-time work is approved by the Owner, provide adequate lighting for the entire work site as directed, subsidiary to the various bid Items.

Comply with all Occupational Safety & Health Administration (OSHA) and United States Environmental Protection Agency (EPA) regulations as well as all local and State requirements.

Refer to the various traffic control plan project overview sheets for the proposed sequence of work. Changes will not be permitted, except as approved in writing by the Engineer.

Plan datum for this project is NAVD 88.

Known utility line conflicts are identified on the plans and have been coordinated with the respective utility company. Contractor shall maintain the traffic control during utilities adjustment and/or relocation work.

The Contractor shall inform the Owner or its designated representative and the respective utility companies when it becomes apparent that an unforeseen utility line will interfere with work in progress and shall allow the respective utility company to enter the site and adjust and /or relocate its utility line(s).

Repair all existing pavement, utilities, structures, etc. damaged as a result of the Contractor's operations at no additional cost to the Owner.

Vibratory rollers will not be permitted for use on work within the developed portion of the project. The developed portion includes the entire limits of Pan American Dr., and Winn Rd. from Pan American Dr. to Southside Rd.

A geotechnical study was prepared for this project. The report will serve for general informational purposes only. Actual field conditions may vary.

As-builts (Record) Drawing will be required as follows:

- All Drawings: 4 Sets of 11”x17” and 2 electronic copies in .PDF format submitted on 2 CD’s.
- PSB Drawings: 4 sets of 11”x17” and 2 electronic copies in AutoCAD format submitted on 2 CD’s.

Item 4L – Scope of Work

Provide vehicular and pedestrian access, at all times, including Saturdays, Sundays, and holidays. Access includes, but is not limited to, driveways, streets, parking areas, and walkways and is subsidiary to the various bid Items.

Schedule and perform all work to assure proper drainage during the course of construction operations. All labor, tools, equipment and supervision required, to ensure drainage, removal, and handling of water is considered incidental work.

Maintain all Contract Items until final acceptance of the project.

Item 5L – Control of the Work

The Owner will furnish horizontal and vertical reference points. The Contractor shall verify all dimensions and grades before proceeding with the work. Report any discrepancies found immediately to the Owner or its designated representative, otherwise the Contractor shall be held responsible for their correctness.

The Contractor shall verify all typical cross-sections prior to commencing construction. The cross sections may be adjusted if necessary to better fit field conditions when approved by the Owner and Engineer.

The Contractor shall pay special attention to the utility sheets, corresponding sequence of work, and shall coordinate field locations of all utilities with the appropriate utility companies, in order to minimize conflicts during construction operations. Damage incurred to any utility, which in the determination of the Owner or its designated representative could have been prevented, shall be

repaired or replaced by the Contractor at his expense as directed by the Owner or its designated representative.

Item 7L – Legal Relations and Responsibilities

Comply with all Federal, State, and Local Laws, ordinances, and regulations that affect the performance of the work. The roadway must be open to traffic at all times. Maintain access to adjacent property at all times. Comply with all requirements of the Environmental Permits Issues and Commitments (EPIC).

Dispose of all waste materials in compliance with Local, State, and Federal regulations. Submit list of all approved waste sites to the Owner for review.

Do not discharge any liquid pollutant from vehicles onto the roadside. Immediately clean spills and dispose in compliance with local, state, and federal regulations to the satisfaction of the Engineer at no additional cost to the Department.

Occupational Safety & Health Administration (OSHA) regulations prohibit operations that bring people or equipment within 10 ft. of an energized electrical line. Where workers and/or equipment may be close to an energized electrical line, notify the electrical power company and make all necessary adjustments to ensure the safety of workers near the energized line.

Any materials not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed.

Item 8L – Prosecution and Progress

Working days are calculated in accordance with Section 8.3.1.4., “Standard Workweek.”

A bar chart schedule is required for this project conforming to Section 8.5.5.1., “Bar Chart.” Provide updates as directed by the Owner.

Prior to beginning operations, schedule and attend a preconstruction conference with the Owner. Provide the Owner a written outline of the proposed sequence of work (Bar Chart Schedule) and an estimated progress schedule.

Keep traveled surfaces used in hauling operations clear and free of dirt or other material.

Maintain thru traffic at all times on Pan American Drive.

Protect from damage and destruction all areas of the right of way, which are not included in the actual limits of the proposed construction areas. Exercise care to prevent damage to trees, vegetation, and other natural features.

Protect trees, shrubs, and other landscape features from abuse, marring, or damage within the actual construction and/or fenced protection areas designated for preservation. Restore any area disturbed or damaged to a condition “as good as” or “better than” prior to start of construction operation. This work will be at the Contractor’s expense.

No additional costs or delays will incur due to utility conflicts/adjustments.

An overall project Notice-to-Proceed will be issued for the entire duration of the project. Work beyond the total number of working days will results in assessment of Liquidated Damages as per the project specifications.

This project consists of a Construction Sequencing Plan containing phases that will be completed in the order described below:

Table 3
Construction Sequencing

Sequence	Phase	Description of Work	Construction Sequence	Contract Time
1	I & III	Phase I: Winn Rd. Westbound from Pan American Dr. to Rio Del Norte Dr. Phase III: Winn Rd. Eastbound from Pan American Dr. to Rio Del Norte Dr.	Phase I can be constructed concurrently with Phase III	248 Working Days
2	II	Phase II: Pan American Dr. Southbound from State Loop 375 to Winn Rd.	Phase II can be constructed concurrently with Phases I and III	74 Working Days
3	IV	Phase IV: Pan American Dr. Northbound from State Loop 375 to Winn Rd.	Phase IV can be constructed concurrently with Phase I and III, but may not start until phase II is complete.	79 Working Days

Liquidated Damages will be effective for each of the phase sequences and/or milestones if they are not completed during the allowed working days indicated.

Item 9L – Measurement and Payment

Submit Material on Hand (MOH) payment requests at least **five (5)** working days before the end of the month for payment consideration on that month's estimate.

The cut off date for purposes of monthly pay applications will be 3 working days prior to the end of the month.

Item 100 – Preparing Right of Way

Refer to Specification for additional list of items covered under this Item. All existing concrete curb, riprap, flumes, driveways, asphalt, pavement milling and concrete pavement structures, trees, metal beam guard fence, guardrail end treatments, terminal anchor sections, and other miscellaneous items not specifically quantified on the demolition plans to be removed will be paid under this Item.

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This Item will be used to remove the top 5 in. of existing material and soil on the center medians where shown on the plans.

Displaced and/or relocated trees and shrubs shall be paid for under this Item.

Maintain 18-inches of cover during construction for all underground utilities.

All aerial telephone, triplex, conductors, cable, etc. shall remain undisturbed, unless otherwise noted.

Item 104 – Removing Concrete

All work items required to saw-cut the existing concrete sidewalks, driveways, curb and gutter, etc. as shown on the plans, or as directed is subsidiary to this Item.

Item 105 – Removing Treated and Untreated Base and Asphalt Pavement

Use this Item to remove base material and asphalt as shown on the plans.

All removed material shall become the property of the Contractor and shall be hauled off from the site and disposed of properly in accordance with all governing requirements.

Item 110 – Excavation

To eliminate all drop-off conditions, construct tapers as directed. This work will not be paid for directly but will be considered subsidiary to this Item.

All suitable excavated materials shall be utilized, insofar as practical, in constructing the required sections or as directed by the Engineer. Unsuitable roadway excavation and excavation more than that is needed shall become the property of Contractor, to be disposed of off-site, in accordance with local, state, and federal requirements.

Excavate to finish subgrade. Scarify subgrade to a uniform depth at least 6 in. below finish subgrade elevation in areas where base or pavement structure will be placed on subgrade. Manipulate and compact subgrade in accordance with Section 132.3.4., “Compaction Methods.” Compact to 95% relative density in accordance with Section 132.3.4.2., “Density Control.”

Excavation for landscape work shall not be paid for directly but shall be considered subsidiary to the various landscape Bid Items.

Excavation related to retention basin and channel shall be paid for under Item 110-6003 “Excavation (Special)”.

Compaction requirements of side slopes for retention basin and channel shall be as shown on the plans. Work related to this will not be paid for separately but considered subsidiary to Item 110-6003 “Excavation (Special)”.

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Item 132 – Embankment

Scarify and compact top 6 in. of existing roadway as directed before additional embankment or base course is placed, subsidiary to this Item.

Compact the side slopes of the embankment to control erosion work will be subsidiary to this Item.

Use density control to compact subgrade. Subsidiary to this Item.

Item 170 – Irrigation System

Adjustment and/or relocation of existing irrigation system lines as necessary to accommodate the proposed site improvements shall not be paid for directly but considered subsidiary to this Item.

Install a drip system and new irrigation components in the areas shown on the irrigation layout sheets. Special care should be taken to protect plant roots. Install proposed emitters as shown on the Irrigation Details sheet. All work, materials, and labor required for connection are subsidiary to this Item.

Emitter devices are to have 8 units (includes seven removable port plugs) with filter. Features must include: 1/2” (13 mm) threaded device inlet with union base nut to allow removal of the body from riser for easy installation and maintenance; Eight independent ports, each capable of accepting a emitter or for independent flows from 0.5 to 24 GPH (1,89 to 90,96 lph), or a self-piercing barb connector (SPB-025) for unrestricted flow; Eight barbed outlet ports mounted on bottom of device capable of securely retaining 1/4” (6,4 mm) distribution tubing; 200 mesh (75 micron) filter, easily serviceable from top of unit. The device must be capable of being used with retrofit in stem pressure regulator. Pressure regulation is required at the emitter device.

The In-Stem Pressure Regulator must be capable of being used with emitter device on ½” pipe. It must regulate to 30 PSI (2.1 bar) pressure regulation at the riser for any ½" FPT emission device or compression adapter.

The Adjustable Check Valve must be capable of being used with emitter device on ½” pipe as shown in the detail. It must be made of PVC type i material stainless steel spring, bolt, & washer epdm o-ring neoprene washer. It is rated @ 150 PSI static pressure @ 72°F. The adjusting nut 1 turn = 1 PSI is factory set at 5#.

The Emitters shall have external surfaces constructed from UV resistant acetyl materials. They are self-flushing to minimize clogging and color-coded to identify flow rate. The red emitter indicates a flow rate of 2.0 GPH Pressure-compensating over the pressure range of 15 to 50 PSI (1,0 to 3,5 bar) with consistent flow rate of 2.0 GPH over this pressure range.

Polyethylene Microtubing must be manufactured from premium linear low-density polyethylene. It must accept insertion of 2 gph emitters and hold firmly.

The Emitter Box shall be a minimum height of 9 1/2 in. The top diameter is 6 in and the base diameter is 8 in. It shall have UV-resistant thermoplastic construction. It should provide access to subsurface drip emitters while protecting against vandalism. Knock-outs or openings for microtubing must be on the sides. The sides must be corrugated. The lid snaps securely into place. Interlocking bottoms allow boxes to mate securely together bottom-to-bottom for deep installations. Deeper valve boxes will be required for emitter devices due to additional components in stem. Lid must be locking or vandal resistant.

The Valve Box and Cover shall be made of structural foam HDPE resin that is resistant to UV light, weather, moisture, and chemical action of soils. The standard rectangular body shall have knock-outs molded into the sides. The knock-outs shall remain an integral part of the body unless removed to run pipes or wires through the valve box.

Valve Boxes shall have corrugated sides. Extension models shall have vertical ribs inside that make them capable of being mounted directly over the top of another box. Boxes shall have a stepped feature on the bottom that securely interlocks two boxes together when mated bottom-to-bottom for use in a deep installation. Lid must flush mount and bolt down locking. Use tan color for box and lid.

The Electric Remote Control Valve shall be a normally closed 24 VAC 50/60 Hz (cycles/second) solenoid actuated globe/angle pattern design capable of having a flow rate of 18 gpm flow with a pressure loss not to exceed 2.6 gpm. The valve pressure rating shall not be less than 150 PSI (10,35) Bars. The valve body and bonnet shall be constructed of high impact, weather resistant PVC with stainless steel screws. The valve shall have manual open/close control (internal bleed) for manually opening and closing the valve without electrically energizing the solenoid. The valve shall house a fully-encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing, and a leverage handle for easy turning. The solenoid shall be compatible with the battery operated controller that is used in this project. The valve shall have a flow control stem for accurate manual regulation and/or shut off of outlet flow. The valve must open or close in less than 1 minute at 150 PSI (10,35 bar), and less than 30 seconds at 20 PSI (1,38 bar). The valve construction shall provide for all internal parts to be removable from the top of the valve without disturbing the valve installation. The body shall have a removable 0-ringed plug for installation in either globe or angle configuration.

The Basket Filter shall provide for continuous filtration of the drip zone. It shall be pressure rated to minimum 150 PSI. and shall incorporate a stainless steel screen element with a basket design. The screen element shall be reinforced with polypropylene ribs to increase durability and the screen element shall be color-coded. The body of the unit shall be constructed of impact resistant glass-filled polypropylene and the cap of glass-filled nylon with a UV resistant polyurethane indicator window. The unit shall incorporate an indicator window that shows when the filter needs to be cleaned. Operating Range Flow 3/4” Basket Filter: 0.20 to 12.0 GPM (45,4 to 2725 l/h); 1” Basket Filter: 3.0 to 20.0 GPM (681 to 4542 l/h); Pressure 15-150 PSI (1,0 to 10,3 bar);Temperature Up to 150º F (66º C). The basket filter is non – pressure regulating.

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An Air Vacuum Release Valve must be set at high points of laterals or one every half mile in pipe runs with little elevation change. It must have a PVC seat with stainless interior components. It is operated by compound lever system and has rubber valve and cast-iron top. Do not use release valves meant for subsurface drip system.

The Battery Operated Controller shall be programmable by a separate field transmitter device only. The program shall be communicated to the control module from the field transmitter via an infrared connection. The controller shall be of a module type, which may be installed in a valve box underground. It shall function normally if submerged in water and the communication from the transmitter shall function if submerged in water. It shall be housed in an ABS plastic cabinet and shall be potted to insure waterproof operation. The battery compartment shall be dual-sealed to prevent water from entering the compartment. The controller shall operate on one nine-volt alkaline battery for one full year regardless of the number of stations utilized. The controller shall have station run time capability from one minute to twelve hours in one-minute increments, a 365-day calendar and three programs with eight start times each and shall be capable of independent program operation using a seven-day cycle. It shall turn on stations via latching solenoids installed on the valves and capable of manual single station or manual program operation. Valve solenoid and controller must be compatible.

The Field Transmitter shall be water resistant and housed in ABS plastic and have a removable, reversible protective sheath. It shall operate on one 9V alkaline battery and have a large LCD screen and a seven-key programming pad. A beep sound shall confirm every keystroke. The screen shall automatically turn off after one minute when not in use. It shall be capable of programming an unlimited number of control modules and have a low battery indicator capable of indicating low battery voltage in the field transmitter or control module.

PVC Glue and Primer must meet ASTM D 2564 Standard *ƒ* Meets SCAQMD Rule 1168/316A *ƒ* Compliant with LEED® *ƒ* Listed by NSF International for compliance with ASTM D 2564, NSF/ANSI Standard 14 and NSF/ANSI Standard 61 for use in potable water applications. *ƒ* Meets CSA standards B137.3 and B181.2 for use in pressure and non-pressure potable water, drain, and vent applications. *ƒ* Listed by IAPMO for compliance with ASTM D 2564 and applicable sections of the latest edition of the Uniform Plumbing Code® specifications: color: gray resin: pvc specific gravity: 0.966 ± 0.04 BROOKFIELD VISCOSITY: Minimum 1,600 cP @ 73° ± 2°F (23° ±

The Backflow Enclosure must meet ASTM B209. B. ASSE 1060 class II-Performance Requirements for Outdoor Enclosures for Backflow Prevention Assemblies. The roof, walls & panels of the enclosure shall be constructed of 5052-H32 (.050/18 gauge) marine grade aluminum, mill finish, ASTM B209 outside with insulation 1 1/2" thick in the walls (9.0 "R" value) or greater. It must be lockable.

The Backflow Insulation Blanket and backflow enclosure must have a minimum combined R value of 25. The blanket material: 22 oz. UV and fire resistant polyvinyl with an insulation core and polyfill insulation. The sewing thread is double-stitched UV-resistant nylon. The blanket shall have been tested to maintain water flow in static lines up to 10 hours in zero-degree temperature.

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Provide Schedule 80 PVC rated for direct sunlight exposure for all above ground pipe including risers and swing-joint components.

It is the Contractor's responsibility to verify water pressure, water source and size in the field prior to construction. Measure pressure on outflow side of meter and provide information to the Owner to verify system function.

Design pressure should be between 50-60 psi. Should a discrepancy exist between design pressure and field pressure, the Landscape Architect shall be notified immediately. Do not proceed with irrigation work until notified by the Owner or its designated representative.

Drawings are generally diagrammatic and indicative of the work to be installed. All irrigation components are to be located in landscape areas, not paved areas. Components may be shown outside of planting areas for legibility. Alternate plans submitted by the Contractor must be sealed by a Licensed Irrigator and submitted for approval.

Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, and sleeves that may be required. Investigate site conditions affecting all work and plan accordingly, furnishing such offsets, fittings, borings, and sleeves as may be required to meet site conditions as directed. This work and materials are subsidiary to this Item.

Contact and coordinate with City of El Paso, Streets and Maintenance and the El Paso Water Utilities to verify meter locations prior to installation. Obtain all required permits and licenses and pay all fees necessary for the installation and operation of the proposed irrigation system subsidiary to this Item.

The Contractor shall stake the location of all trees prior to trenching. Tree location takes precedence. Trenching through root balls is not allowed. Trenches must be 24" minimum away from tree trunks. Stake out emitter units and piping locations prior to trenching. After approval by the Landscape Architect, equipment installation may begin.

All piping/wiring running beneath paved surfaces (drives, walks, etc.) shall be installed in schedule 40 PVC sleeves which are at least 1" larger than all pipe contained in sleeves or sleeves must be 2 x the diameter size of pipe encased, whichever is greater. Mark ends of sleeves on curbing or sidewalks. Extend sleeve twenty-four inches (24") beyond edge of hard surfaces; wrap ends with minimum 4 mil plastic and tape with heavy duty plastic tape or approved equal. Gray cloth duct tape is not acceptable.

If sleeving is omitted, install the irrigation system using the bore method when crossing existing roadways and driveways as directed. All bores are subsidiary to this Item.

All pipe cuts shall be mitered to 90 degrees to assure proper solvent weld. All burrs shall be removed prior to gluing and must have a filed beveled edge a minimum of one fourth (1/4) the width of pipe wall. Pipe must be cleaned with PVC cleaner and primer applied as recommended by manufacturer when gluing process is undertaken. Primer should be moist as glue is applied and PVC piping is assembled. Use primer. Use gray glue heavy duty. When pipe is set in socket

give 1/4 turn. Wipe off all excess cement and let set per manufacturer's recommendations. Initial set times shall be minimum of 5 min. For 1/2 to 1-1/4" pipe; 8 min. For 1-1/2" pipe to 2" pipe; 2 hours for 2-1/2"to 6" pipe. Cure times are 20 min for 1/2" to 1-1/4" pipe; 30 min. For 1-1/2" pipe; 4 hours for 2-1/2" pipe. When humidity exceeds 60% increase cure time by 50%. Once weld is set, pipe shall not be moved for any reason until set times have been achieved. Water shall not be turned on until all cure times have been achieved.

The Owner or its designated representative must be present during all flushing, testing and adjusting. The Contractor must provide 24-hour notice to the Engineer prior to conducting the tests. Flushing must be performed prior installing dripline. Hydrostatically test irrigation main line and laterals for a 24-hour period and present the results in writing to the Owner or its designated representative. Secure approval for any alternative locations before installation.

The finish grade of all trenched areas shall be smooth, even and consistent, free of any humps, depressions or other grading irregularities. Overfill trenches and compact so not to crush the pipe. Inspect trenches for settling and backfill and regrade if necessary. Remove and dispose of rocks larger than 1-inch.

Repair any damages caused by construction efforts to the existing irrigation.

Perform irrigation system work under the supervision of a person possessing an irrigator’s license issued by the TCEQ and provide documentation of this license. Ensure that all zones are functioning properly and providing adequate moisture to maintain healthy plants using an approved watering schedule. Repair system using replacement parts of the same type and manufacturer as originally installed or approved equal. Provide plant irrigation by an approved alternate method at no cost to the Department if the system fails due to the Contractor’s actions or neglect. This work is subsidiary to this Item.

Do not willfully install the irrigation system as shown on the plans when it is obvious in the field that obstructions, grade differences, discrepancies in area dimensions, or conflict between plans and the irrigation design exist, notify the Owner or its designated representative in writing. Consider this work incidental to the project. Contractor will assume full responsibility in the event this notification is not performed.

Do not proceed with installation of conflicting irrigation components until written clarification is received.

Watering time: set per local watering codes. Initially set the controller for 40 min.3 times per week. Increase run time if needed if plants appear stressed.

Fine tune and adjust the irrigation system so that no water runs onto the street or walks. If necessary, use multiple run times with 2-hour soak times in between cycles. Do not decrease total run time per week.

Maintain all work until it is complete and accepted. The maintenance and plant establishment period begin after work is accepted. Warranty/maintenance period is one year from date of acceptance.

At the final walkthrough inspection upon completion of the project, furnish a set of 11x17 as-built plan sheets prepared by a qualified draftsperson. Show all system changes, rerouting of main and lateral lines, size of water meters installed along with the location address and meter number. Provide any manufacturer literature and warranty documents for the irrigation system components for submission to the agency responsible for maintenance. Submit a copy of the backflow test report and provide irrigation system operation manuals and controller transmitter to the City of El Paso Street and Maintenance Representative. This work is subsidiary to this Item.

Irrigation system must be installed and operational prior to planting.

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), P.O. Box 22. 13087, Austin, TX 78711. Contractors must follow requirements of TCEQ. Include instructions covering full operation, care, and maintenance of the equipment. Instruct designated personnel in proper operation of the system. Plans must be on site at all times. A licensed irrigator must oversee the work.

Inspect the irrigation system and make repairs every two weeks or upon notification by the City of El Paso. Periodic adjustments of the irrigation system controllers may be required if run-off occurs or the plants are not in a healthy growing condition. The Contractor shall contact the City of El Paso Arborist if more than 5 trees appear to be in a stressed condition. The Contractor shall inspect the base of the plants and trees to confirm that the plants are receiving water. Replace any emitters that seem to be clogged.

Item 192 – Landscape Planting

Protect newly graded areas from traffic and erosion.

Refer to plans for utility locations. Gas lines cross planting areas. Do not machine excavate within 5’ of gas lines. Do not place tree root balls within 5’ of gas lines. Relocate trees with insufficient clearance from gas lines.

The terms “vegetative barrier” and “weed barrier” shall be used interchangeably.

Plant maintenance period is 1 year, unless otherwise directed by the Owner.

Plant material, quality, size, and condition at nursery and when delivered at job site will be in accordance with American Standard for Nursery Stock, current edition, as published by The American Association of Nurserymen and the Texas Association of Nurserymen requirements. Provide written assurance that all materials necessary to complete the project as specified have been located 60 days prior to installation.

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Plant material substitutions are not allowed without the written permission of the Landscape Architect. Requests for substitutions must be submitted no later than 2 weeks prior to the initiation of work. The sum of materials differing in kind and quality or size from that specified will be allowed only after proving that all means of obtaining and specified materials have been exhausted.

Trees and shrubs must meet the size requirements indicated on the legend. The Contractor may substitute a larger size due to availability but at no additional expense to the Owner. Substitutions will only be allowed only after proving that all means of obtaining specified materials have been exhausted. Provide list of nurseries contacted when requesting substitutions.

Provide nursery grown plants that are tagged with nursery labels indicating species and variety. Remove nursery tags after acceptance of planted material at site. Nursery invoice may be requested by the City of El Paso Arborist or Landscape Architect for further verification.

Photos of plant material from out of town nurseries may be submitted for approval. For trees, submit photos showing overall form and another photo close up of the caliper being measured at the base. The City of El Paso Arborist or Landscape Architect still has the right of refusal at the site inspection.

The City of El Paso Arborist or Landscape Architect will be the judge of the quality and acceptability of all plant materials. All rejected material will be immediately removed from the site and replaced with acceptable materials as specified under this Item and no additional cost to the Owner.

Trees and shrubs in leaf delivered to the site shall be covered with a canvas tarp during transport. Plastic tarps are prohibited. Plants may be transported to the site in an enclosed vehicle but must be unloaded immediately upon arrival.

Do not lift trees by the trunk. Lift by container.

Provide plants typical of their species or variety and have normal, well developed branches and vigorous root systems that are sound, healthy, free from defects, disfiguring knots, abrasions or the bark, sunscald injuries, plant diseases, insect eggs, borers and all other forms of infections.

Provide plant material that has a uniform shape around its complete circumference. Plant material with irregular branching patterns or with branching patterns more highly developed on one side than the other sides are not acceptable. Do not select trees with low fork branching pattern. Minimum height is 10'. Caliper is measured at 6" above the top root at the base of the trunk. Unless specifically noted on the plans, provide single-trunk trees that are straight, free of “dog-legs,” “crooks,” “y-crotches,” or other disfiguring shapes, and that the central leader has not been pruned. Trees with double leaders are not acceptable unless specified as multi-trunked.

Ensure that container grown plant material has been established in its delivery container no less than six months but not more than two years. Root-bound material will not be accepted.

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Use weed barrier specified on plans beneath areas receiving rock mulch.

Protect existing plants to remain within the work zone with orange plastic tape fence and stakes, or as directed. Materials and labor are subsidiary to this Item.

Prior to construction, meet with the City of El Paso Arborist in the field to review status and intentions for existing trees in project area. Flag existing trees designated in the plans to remain for identification and treat as described below.

Existing plant material damaged during construction activities will be replaced with a similar type and size of plant at no additional cost to the Department.

Install stakes and flagging around existing trees at the drip line (end of branches). Do not use machinery to remove gravel. Gravel must be removed by hand within the drip line of existing trees.

Protect tree root systems from damage due to: noxious materials caused by runoff or spillage while mixing, placing or storing construction materials; flooding, eroding, or excessive wetting caused by watering operations.

Remove all wire, string, wire baskets, burlap, containers, etc. From the root ball of plants before backfilling the planting hole. Set plant material in planting pit to proper grade and alignment. Set plants so that the root ball is flush with finished grade. The top root where it meets the trunk is an indicator for planting depth.

Use native soil to backfill planting pit that is free from clay, lumps, coarse sand, stones over 1", plant roots, or other foreign materials. Remove impervious soil and large rocks. Water in to prevent air pockets and settling. Form a ring of soil around plants that are located on a slope to retain water.

Contact the Owner or its designated representative if impervious soils are encountered. The Owner or its designated representative may decide on a new location for the tree/plant or may require planting to proceed. See planting detail on detail sheets for more information for planting in impervious soils. Use soil stockpiled from planting pits for backfill for plants in impervious soils.

The finished grades of all planting areas shall be smooth, even, and free of humps, depressions or irregularities. See details to determine finish grade adjacent to concrete areas and walkways to allow for mulch thickness (if mulch is specified).

It shall be the Contractor’s responsibility to prevent plants from falling or being blown over. Straighten and stake trees using guying method shown on the aesthetics detail sheet. Replace trees damaged due to lack of or improper staking at the Contractor's expense and at no additional cost to the Owner.

Rabbit fencing for tree and plant protection is incidental to the tree and plant installation. Use three (3) layers of poultry netting when wrapping trees and plants. Staple netting to wooden

surveyor stakes for plants. Hammer landscape staples through all layers into the ground. Place 2 staples between each plant surveyor stake for plants and 1 staple every 6" in mesh around trees. See details for tree and plant rabbit protection on the aesthetic detail sheet. The work performed, and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "192-6004 Plant and 192-6074 Tree installation." This price is full compensation for furnishing all materials, equipment, labor, and incidentals.

The materials required for the Rabbit Protection are as follows:

A. 12" x 1" x 12" 8 gauge galvanized steel landscape staples.

B. Poultry Netting - 1" hexagonal mesh weave. Zinc-Coated steel. Galvanized. 24" height

C. Surveying Wooden Grade Stakes ¾" x 1-1/2" x 24"

The location of traffic signage takes precedence over tree placement. With permission from the Owner or its designated representative, relocate trees as needed so not to obstruct views or conflict with proposed signage locations. Verify sign placement prior to planting. Do not place center of plants with 4' of curb or edge of asphalt.

Do not dump gravel over plants or bury plants in gravel. See details for gravel placement adjacent to plants on the aesthetic detail sheet.

Irrigation system must be installed and operational prior to planting.

Contact El Paso Street and Maintenance Department and City Arborist for inspections of the following:

A. Tree review prior to installation. Provide notification when plant material is available for inspection at the nursery: prior to delivery, before and after planting at the job site.

B. Plant placement, prior to installation of mulch

C. Final walkthroughs. Brent Pearson - City Arborist, 915 212-1848 and

Harold Kutz - Engineering Division Manager, 915 212 7044

Comply and follow vegetation maintenance during the required establishment period as stated under Item 193.

Item 193 – Landscape Establishment

Maintenance of new trees, shrubs, and ground cover begins immediately after all requirements under Item 192 has been completed and accepted and continues for 12 months.

Herbicide applications are required, subsidiary to this Item. Exercise care when applying herbicide, any damage incurred due to Contractor negligence will be Contractor's responsibility.

Fertilize all plants during the 12-month maintenance period as needed per season or as directed. Fertilizer and the application labor is subsidiary to this Item.

Five-gallon plants and thirty-gallon trees will be replaced if more than 1/3 of the branches have died or as determined by the Engineer. The plants and trees shall be replaced with the same type and size as originally specified. If the same type and size is not available contact the Engineer for instructions.

On a monthly basis, the Contractor shall inspect and adjust or reinstall as needed, the tree and plant protection to prevent damage from rabbits. Enlarge the fence perimeter to prevent the plant material growing through the fencing.

At the end of the 12-month landscape establishment period the Contractor will remove the tree and plant protection.

Item 247 – Flexible Base

Preparation and compaction of the subgrade is considered subsidiary to this Item. Subgrade to be Compacted to 95% relative density in accordance with Section 132.3.4.2., “Density Control.”

Payment for this Item will be measured as shown on plans.

Item 276 – Cement Treatment (Plant-Mixed)

Payment for this Item will be measured to back of curb unless otherwise noted on the plans.

Item 310 – Prime Coat

Prepare and treat existing or newly constructed surface with a bituminous material as shown or as directed by the Owner or its designated representative. Apply blotter material as required.

Cure prime coat on the cement-stabilized material for at least 48 hr. prior to beginning hot-mix asphalt placement operations.

Item 341 – Dense-Graded Hot-Mix Asphalt

Do not cover any existing survey monuments, manholes or valve covers, etc. with asphaltic material.

Place a string line or other suitable marking to ensure smooth, neat lines, or as directed.

The construction of the final riding surface at phase limits shall be completed at once in order to provide a seamless transition.

The application of the tack coat and/or prime coat shall not be paid for separately but considered subsidiary to this pay Item.

All utility and storm water junction boxes, manholes and covers and any other pavement penetrations within the asphalt pavement section shall have a concrete penetration apron as shown on the plans. This work shall be considered subsidiary to this Item.

Do not use diesel or solvents as asphalt release agents in production, transportation, or construction. A list of approved asphalt release agents is available from the district laboratory.

No more than one hot mix lot will be open for any specific type of hot mix, unless authorized. After a lot is open and the Contractor gets approval to change plants, the previous lot will be closed, and a new lot will be opened. The numbering for the lots produced at the new plant will start with No. 1. If allowed to switch back to the original or previous plant, the next lot from that plant will resume numbering sequentially from the last lot produced by that plant.

Prepare the surface by removing raised pavement makers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges.

Apply an antistripping agent to asphaltic concrete pavement in accordance with this Item 301, “Asphalt Antistripping Agent” as directed. Materials are subsidiary to this Item.

Payment for this item related to the pavement reconstruction limits of Winn Rd. and Pan American Dr. are measured to the back of curb. Payment for this item within the pavement rehabilitation (resurfacing) limits of Pan American Dr. are measured to the gutter.

Item 351 – Flexible Pavement Structure Repair

This item shall be used for areas called out on the plans as temporary pavement. Subgrade to be Compacted to 95% relative density in accordance with Section 132.3.4.2., “Density Control.”

Payment for this Item will be measured to edge of pavement unless otherwise noted on the plans.

Item 360 – Concrete Pavement

Use Class P, Type II Cement for this Item unless otherwise approved by the Owner and Engineer.

A pre-paving meeting will be required. Submit a paving plan detailing the location of joints and the sequence of paving for approval to the Engineer at least seven days before the pre-paving meeting.

A minimum of two additional sets of cylinders will be required for early-strength determination when concrete placement is at one of the specified locations, which requires opening to traffic immediately after 72 hours of placement. Once the required design strength has been attained as determined by Compressive Testing.

Only multiple piece tie bars, as described in Section 360.2.2.2, “Tie Bars,” and as noted on Standard sheet CRCP (1)-17 “Continuously Reinforced Concrete Pavement,” will be used at longitudinal construction joints and only threaded couplings will be permitted for these tie bars.

New concrete pavement paving adjacent to existing concrete paving will require a neat saw-cut edge and drilling as per Item 361, “Repair of Concrete Pavement,” regardless whether transverse or longitudinally. This work is subsidiary to this Item.

When freezing weather or windy conditions in excess of 25 mph are forecasted to occur within 12 hours from the last CRCP placement of the day, cover and protect the entire CRCP placed that day with cotton blankets and polyethylene fill immediately after the membrane curing has been applied. Place and weigh the film so it will remain in direct contact with the surface for a period of 48 hours and to the satisfaction of the Engineer.

Place longitudinal joints at a minimum distance of 6 in. from the lane lines to minimize any conflicts with the pavement markings. Ensure that these joints do not fall within the anticipated wheel path area.

Use poured joint sealer Class 4 on all sawed joints. This work shall be considered subsidiary to this Item.

Where proposed concrete pavement abuts existing concrete pavement, the placing of the tie bars shall be approved by the Owner or its designated representative.

Seal pavement surface with two coats of the specified type of curing compound. Each coat shall be applied uniformly at the rate of coverage recommended by the manufacturer and directed by the Owner or its designated representative, but not less than one gallon per 180 square feet of surface area per application within thirty (30) minutes of placing concrete.

Payment for this Item will be measured to back of curb unless otherwise noted on the plans.

Item 400 - Excavation and Backfill for Structures

Use this pay Item for hauling excess material and shall include off-site disposal.

Item 401 – Flowable Backfill

Additional flowable backfill for over-excavated will not be paid for.

Item 402 – Trench Excavation Protection

Use this Item to pay for trench excavation protection for the storm drain system only to include all inlets, manholes and headwall structures.

For excavation depths greater than 5-ft, OSHA requires a trench excavation protection system. Contractor shall provide such system in accordance with the current osha requirements. Trench excavation protection systems requiring an engineering seal shall be from an engineer licensed in the state of Texas bearing the signature and seal of a registered professional engineer for approval to the Owner or its designated representative prior to excavation and shoring work.

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Item 416 – Drilled Shaft Foundations

Stake all foundation locations and secure approval by the Owner or its designated representative prior to commencement of drilling operations in order to ensure no conflicts with utility lines. Coordinate with the Utility companies for utility location within the project limits. Repair any damage to existing utilities to the satisfaction of the utility Owner at no additional cost to the Owner.

Use Class “C” concrete.

Cover drilled shafts with plywood and delineate them with cones, to the satisfaction of the Owner or its designated representative, when not working in them and after work hours.

Replace faulty anchor bolts as directed. Do not weld anchor bolts.

Remove spoils, daily, out of the drainage areas or as directed.

Provide a formed smooth finish for all portions of drill shafts extending above proposed ground subsidiary to this Item.

Pole foundations will be paid for once, regardless of extra work caused by obstructions.

Concrete removal required for installation of drilled shaft is subsidiary to this Item.

Item 421 – Hydraulic Cement Concrete

Furnish and properly maintain all test molds. Furnish test molds meeting the requirements of Tex-447-A and Tex-448-A. The test molds must be ready for use when needed. The Contractor will be responsible for curing and transporting concrete specimens as directed. Furnish proper equipment to remove concrete specimens from the molds. For all concrete items, provide a wheelbarrow or other acceptable container to the Owner or its designated representative. This work is not paid directly and is subsidiary to this Item.

Test Method Tex-418-A is allowable for 7-day job-control tests.

Obtain approval for all concrete mix designs and concrete aggregate sources.

Provide sulfate-resistant concrete for all structural concrete in contact with soil or groundwater.

Concrete trucks will not be allowed to wash-out or discharge surplus concrete or drum-wash water on the project site.

For the purpose of sampling and testing only, all Class “A” and “B” concrete shall be defined as miscellaneous concrete.

All concrete designs and concrete aggregate sources shall be approved by the Owner.

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Item 432 – Riprap

Provide Type II cement and Class A concrete.

Reinforce all concrete riprap using bar reinforcement conforming to Item 440, “Reinforcement for Concrete,” as shown on the plans, or as directed.

Finish concrete riprap with a smooth (wood float) finish, unless otherwise directed.

Obtain approval for all stone riprap material sources.

Stone riprap shall be dry loose rock, and in accordance with the specification with Item 432, “Riprap,” for slope protection.

Item 442 – Metal for Structures

Prepare and submit the field erection drawings in accordance with Item 441, “Steel Structures,” for approval prior to construction. Show details for additional temporary lateral bracing to be used to secure plate girders from wind loads during erection and construction on the field erection drawings. Additional temporary shoring may include, but is not limited to guy wires with deadman anchors, etc. Temporary lateral bracing may be removed upon approval. Temporary lateral bracing is subsidiary to this Item.

Item 464 – Reinforced Concrete Pipe

Use Class III circular pipe for all proposed reinforced concrete, unless otherwise shown on the plans.

Use rubber gaskets conforming to ASTM C361 or C443 as jointing material for concrete pipes.

Coordinate locations of all utilities and corresponding sequence of work. Repair any damage to existing utilities to the satisfaction of the utility Owner at no additional cost to the Owner.

A 3/4-inch plywood board shall be used to plug the reinforced concrete pipe where required, as directed by the Owner or its designated representative. All labor, materials and incidentals required to accomplish such work shall be considered subsidiary to this Item.

All temporary pipe required to bypass storm water flows at construction phase interfaces will not be paid for directly but considered subsidiary to this Item. This includes installation, removal and/or repair. The Owner or its designated representative shall approve all temporary pipe prior to ordering and installation.

Granular pipe bedding material shall consist of the following physical characteristics:

Table 4
Granular Pipe Bedding Material

Sieve size (square openings)	Percent passing by weight
3/8-inch	100
No 200	0-12

The granular bedding shall be non-plastic as determined in accordance with ASTM d 4318. The material shall be free from roots, grass or other vegetable matter, clay lumps or other deleterious materials.

Trench backfill material shall consist of the following physical characteristics:

Table 5
Trench Backfill Material

Sieve size (square openings)	Percent passing by weight
3 inch	100
3/4 inch	70-100
No. 4	40-100
No. 200	5-40

The plasticity index of the backfill material, as determined in accordance with ASTM D 4318, shall not exceed 15. The trench backfill shall be free from roots, grass or other vegetable matter, clay lumps or other deleterious materials.

Additional flowable backfill for over-excavated areas will not be paid for.

Item 465 – Junction Boxes, Manholes, and Inlets

Field verify all low-point locations prior to their construction. Obtain approval for any necessary adjustment.

Where inlets may be exposed above the natural ground upon completion, place embankment around them to drain as directed. All such work will be considered subsidiary to this Item.

Coordinate all inlet locations and elevations with the project cross-sections and verify prior to their construction.

Place pedestrian fence around all incomplete junction boxes, inlets and manholes to protect pedestrians in the surrounding area, as directed, subsidiary to this Item.

All required structural excavation, frames, grates, rings, cover and other incidentals shall not be paid for directly, but considered subsidiary to this Item.

Contractor shall utilize non-shrink grout to seal joint between RCP and drainage structures. The cost for this Item shall be incidental to the other various drainage bid Items.

All temporary junction boxes, manholes, and/or inlets required to bypass storm water flows at construction phase interfaces will not be paid for directly but considered subsidiary to this Item. This includes installation, removal and/or repair. The Owner or its designated representative shall approve all temporary pipe prior to ordering and installation.

Concrete Class "B" invert shaping is required at all inlets, manholes and junction boxes in order to ensure positive flow. The material and work performed for the placement of the inverts shall be considered subsidiary to this Item.

Additional flowable backfill for over-excavated areas will not be paid for.

Item 467 – Safety End Treatment

The Safety Grate shown on the plan details shall be paid for under Item 466-6447 "SET (TY II) (36 IN) (RCP) (2: 1) (P)"

Item 471 – Frames, Grates, Rings and Covers

All grate and frame elevations shall be coordinated with the project cross sections and storm sewer system layouts.

All required frames, grates, rings, covers and other incidentals shall not be paid for directly, but considered subsidiary to Item 465.

All storm sewer manhole covers shall be as per the City of El Paso standard shown on the plans.

Item 479– Adjusting Manholes and Inlets

Coordinate with respective utility Owners before adjusting existing utility manholes, meters, valve covers, etc.

Coordinate to complete all required adjustments within project duration acceptable to the Owner and each applicable utility Owner.

Locate and reference all manholes and valves within the construction area with station and offset. Each manhole and valve shall be identified by its Owner (saws, cps, etc.). No roadwork will begin until this list has been submitted. Gas valves have to be accessible at all times, therefore; temp. CTB, material stock piles, etc. Cannot be placed over these valves.

Construct all manholes and valves to final pavement elevations prior to the final mat of ACP. If, between the final elevation adjustment and the final mat of ACP, the manholes and valves are going to be exposed to traffic, place temporary asphalt around the manhole and valve to provide a +/- 50:1 taper. The cost of elevation adjustment will be part of the manhole and valve work, and asphalt tapers are part of the ACP work.

Water and sanitary sewer service lines and meters to be field located and adjusted to match proposed grade. Coordinate with utility for reconnection and relocation. This work shall be considered subsidiary to this Item.

Item 502 – Barricades, Signs, and Traffic Handling

Prior to beginning construction, the Contractor will submit for approval the routing of traffic and sequence of work.

Additional signs and barricades, placed as directed, will be considered subsidiary to this Item.

All TMA Operators must participate in a TMA workshop to be conducted by the El Paso District Safety Office, on the proper use of TMAs, prior to working on Department Right of Way (ROW). A certificate of completion will be issued to TMA Operators that successfully complete the TMA workshop. The certificate of completion must be carried by TMA Operators at all times while working on Department right of way.

In accordance with Section 7.2.6.1, designate, in writing, a Contractor Responsible Person (CRP) and a CRP alternate to take full responsibility for the set-up, maintenance, and necessary corrective measures of the traffic control plan. The CRP or CRP alternate must be present at site and implement the initial set up of every traffic control phase/stage, at each location, and/or each call out, for the entire duration of the project.

At the written request of the Engineer, immediately remove the CRP or CRP alternate from the project if, in the opinion of the Engineer, is not competent, not present at initial TCP set-ups, or does not perform in a proper, skillful, or safe manner. These individuals shall not be reinstated without written consent of the Engineer.

CRP and CRP alternate must be trained using Department approved training. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 1 for Department approved Training.

Table 6
Contractor Responsible Person and Alternate

Provider	Course Number	Course Title	Duration	Notes
American Traffic Safety Services Association	TCS	Traffic Control Supervisor	2 days	
National Highway Institute	133112 133113	Design and Operation of Work Zone Traffic Control Work Zone Traffic Control for Maintenance Operations	1 day 1 day	Both courses are required to meet minimum required training.
Texas Engineering Extension Services	133112A	Design and Operation of Work Zone Traffic Control	3 days	
University of Texas Arlington Division for Enterprise Development	WKZ421	Traffic Control Supervisor	16 hours	Contact UTA for training needs.

All Contractor workers involved with the traffic control implementation and maintenance must participate and complete a Department approved training course. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 2 for Department approved training.

Table 7
Other Work Zone Personnel

Provider	Course Number	Course Title	Duration	Notes
American Traffic Safety Services Association	TCT	Traffic Control Technician	1 day	
Texas Engineering Extension Services	HWS002	Work Zone Traffic Control	16 hours	Identical to HWS-410. Counts for 3-year CRP requirement.
National Highway Institute	133116	Maintenance of Traffic for Technicians	5 hours	Web based
National Highway Institute	134109-I	Maintenance Training Series: Basics of Work Zone Traffic Control	1 hour	Free, Web based
University of Texas at Arlington, Division for Enterprise Development	WKZ100	Work Zone Safety: Temporary Traffic Control	4 hours	Note name change. Free, Web based
TxDOT/AGC Joint Development	N/A	Safe Workers Awareness Highway Construction Work Zone Hazards	16 minutes 18 minutes	Videos available through AGC of Texas offices. English & Spanish
AGC America	N/A	Highway Work Zone Safety Training	1 day	
Texas Engineering Extension Service	HWS400	Temporary Traffic Control Worker	4 hours	Contact TEEX, if interested in course
TxDOT/AGC Joint Development	N/A	Work Zone Fundamentals	10 minutes	Videos available through ACT of Texas offices. English & Spanish

Contractor may choose to train workers involved with the traffic control implementation and maintenance with a Contractor developed training in lieu of Department approved training. Contractor developed training must be equivalent to the Department approved training shown in Table 2. Provide the Engineer a copy of the course curriculum for pre-approval, prior to conducting

the Contractor developed training. Provide the Engineer a copy of the log of attendees after training completion for project records.

Acquire the TCP and TMA Operator's certificates of completion prior to the authorization to begin work. No time suspension will be granted, and no traffic control work will be allowed without certificates of completion.

Existing regulatory signs, route marker auxiliaries, guide signs, and warning signs that must be removed due to widening shall be relocated temporarily and erected on approved supports at locations shown in the plans, or as directed. This work will not be paid for directly but considered subsidiary to this Item.

Notify the Department officials when major traffic changes are to be made, such as detours. Coordinate with the Department on all traffic changes. Advance notification for the following week's work must be made by 5 P.M. on Wednesdays.

Provide access to intersecting side roads and driveways at all times, unless otherwise directed.

Any change to the sequence of work or TCP, with approval, assumes the responsibility for any additional barricade signs and devices.

Use striping operations to channelize traffic into the newly completed roadway, as directed. Maintain shoulders and median areas in a condition capable of serving as emergency paths, as approved. This work will be subsidiary to this Item.

Use portable changeable message signs (PCMS) to alert public of construction activities two weeks prior to construction.

Use flaggers when directed. Provide two-way radio communication for all flaggers.

Place and maintain sufficient additional warning signs, beacons, delineators, and barricades to warn and guide the public of all hazards through the construction zone at all times, and as directed.

Use flashing arrow boards on all tapers for each lane closure.

Some signs, barricades, and channelization devices may not be shown at the precise or measured position. Place the barricades, devices, or signs, with approval, in positions to meet field conditions.

Fill any holes left by barricade or sign supports and restore the area to its original condition.

Use Type A flashing warning lights or delineators to mark open excavation, footings, foundations, or other obstructions near lanes that may be open to traffic, as directed.

For additional information pertaining to channelization, signing, spacing details, and flagging procedures required to regulate, warn, and guide traffic through project, refer to the "Barricade

and Construction Standards," BC(1)-14 and to the current *Texas Manual on Uniform Traffic Control Devices(TMUTCD).*

Remove or cover signs that do not apply to current conditions at the end of each day's work.

Repair and/or replace all signs damaged by the public or due to weather events.

Safety Contingency

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancement, to improve the effectiveness of the TCP that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid Items if it does not slow the implementation of enhancement.

Item 506 – Temporary Erosion, Sedimentation, and Environmental Controls

Place Best Method Practices (BMP's) in locations as designated in the plans or as directed to meet field conditions.

Place a weatherproof bulletin board containing the Texas Commission on Environmental Quality (TCEQ) required information on the project at a site as directed. Post the following documents:

(1) TCEQ "TPDES Storm Water Program" Primary & Secondary Construction Site Notice (Both must be filled out and signed);
(2) TCEQ "Notice of Intent"; and
(3) TCEQ "TPDES Permit."
Place rain gauge(s) at locations as designated.

Contractor will be responsible for obtaining and cost of CGP, NOI, TPDES and NOT.

The total disturbed area for this project is shown on the plans. The soil disturbed area in this project, all project locations in the Contract, and Contractor Project Specific Locations (PSLs), within one mile of the project limits, for the Contract will further establish the authorization requirements for Storm Water Discharges. The Department will obtain an authorization to discharge storm water from TCEQ for the construction activities shown on the plans. Obtain any required authorization from the TCEQ for any Contractor PSLs for construction support activities on or off right of way. When the total area disturbed for all projects in the Contract and PSLs within one mile of the project limits exceeds five acres, provide a copy of the Contractor Notice of Intent (NOI) PSLs on the right of way to the Owner.

Place Best Method Practices (BMP's) as shown on the plans, or as directed. Maintain and properly place the erosion control measures to prevent storm water pollution to the Waters of the United States, as directed. Within the project limits, keep all inlets functional as long as possible to accept storm water as part of the Storm Water Pollution Prevention Plan (SWP3), as directed.

The sedimentation fences will be paid at the time of their initial placement. Any required replacement will not be a substitute for proper maintenance and be allowed as directed. This work is subsidiary to this Item.

Grading operations will be limited to the catch point of the proposed cross-section.

Preserve any vegetation outside these limits.

Item 529 – Concrete Curb, Gutter and Combined Curb and Gutter

Use Type II cement and Class A concrete for these Items, unless otherwise shown on the plans. Wire mesh will not be allowed. Reinforce all concrete using reinforcement conforming to Item 440, “Reinforcement for concrete,” as shown on the plans or as directed.

Construct the curb opening with metal plate configuration detailed in the plans, or as directed, to ensure roadway drainage to the existing basin. All required manipulations or incidentals required to complete the work are subsidiary to these Items.

Perform all required grading for proposed concrete curb, gutter, and combined curb and gutter construction as shown on the plans.

After construction, restore the adjacent surface to a condition approved by the Engineer, subsidiary to this Item.

All concrete gutters shall have a minimum thickness of 6-inches.

Item 530 – Intersections, Driveways, and Turnouts

Saw-cut existing roadways and driveways to neat lines when proposed sidewalks intersect. Clean area prior to concrete placement. This work is subsidiary to this Item.

Use Class A concrete for all concrete driveways, unless otherwise shown on the plans.

High early strength concrete for proposed driveways to be available as deemed necessary and as directed.

Item 531 – Sidewalk

The wheelchair ramp dimensions and locations shown in the plans may be adjusted, as directed, to match the field conditions. Any such modification will not be paid directly but will be subsidiary to this Item.

Modify the sidewalk expansion joint spacing to 20 ft. spacing where waterlines may exist under the sidewalk subsidiary to this Item.

Provide textured finish for wheelchair ramps as directed.

Perform all work under this Item to conform to ADA and TDLR standards.

Perform all requiring grading for proposed sidewalks construction as shown on the plans. All grading, including excavation, fill, and embankment is subsidiary to this Item.

Detectable warning surface for new ramps shall be made from an approved surface applied vitrified polymer composite tile, red in color.

Item 538 – Right-of-Way Markers

This Item shall be used for the installation of the new city monuments identified on the plans.

New city monuments shall be certified and sealed by a professional surveyor licensed in the state of Texas.

Any existing monuments not identified for replacement or removal disturbed by the Contractor shall be reconstructed at no cost to the Owner and shall be certified and sealed by a professional surveyor licensed in the state of Texas.

Item 540 – Metal Beam Guard Fence

Provide composite blockouts for all Metal Beam Guard Fence (MBGF) posts.

Install guardrails in the direction of traffic flow.

Stake the locations for approval prior to beginning the installation of the proposed MBGF.

Remove all delineators and object markers associated with the MBGF subsidiary to this Item

Verify MBGF post lengths and heights prior to ordering materials.

Place reflectors, as per Delineator and Pavement Marker Standard Sheet D&OM (1)-15 on the metal beam rail element or as directed subsidiary to this Item.

At the end of each work day, protect all untreated, incomplete, MBGF/Rail blunt ends exposed to traffic flow during construction until the permanent end treatment is in place. All work and incidentals are considered subsidiary to this Item.

MBGF not used will become the property of the Contractor.

Item 544 –Guardrail End Treatments

Provide composite blockouts for all MBGF posts.

Install guardrails in the direction of traffic flow.

Stake the locations for approval prior to beginning the installation of the proposed Metal Beam Guard Fence (MBGF).

Remove all delineators and object markers associated with the MBGF subsidiary to this Item.

Verify MBGF post lengths and heights prior to ordering materials.

Place reflectors, as per Delineator and Pavement Marker Standard Sheet D&OM (1)-15 on the metal beam rail element or as directed subsidiary to this Item.

At the end of each work day, protect all untreated, incomplete, MBGF/Rail blunt ends exposed to traffic flow during construction until the permanent end treatment is in place. All work and incidentals are subsidiary to this Item.

MBGF not used will become the property of the Contractor.

Item 585 – Ride Quality for Pavement Surfaces

Surface Test Type B Schedule 2 will be required for final riding surface.

Item 618 – Conduit

For conduit placement in pavement, Contractor shall bore underneath pavement. Contractor shall submit bore plan for approval by the Owner. Pavement cutting is not allowed on Right-of-Way.

Backfill roadway and driveway trench with cement-stabilized backfill at the end of each working day. Place an asphalt patch at the end of the week or as directed by the Engineer.

Utility permit is needed for all bores. Coordinate with City of El Paso.

The location of conduits and ground boxes are diagrammatic only and may be shifted to accommodate field conditions as directed.

Bore shall be directional, bore pits, and sidewalk replacement are subsidiary to Item 618.

Pot-holing at boring of conduit locations by the Contractor shall be performed at the Contractor's discretion or as directed by the Owner where there may be potential utility conflicts. This work is subsidiary to Item 618. Pot-holing shall follow city ordinance on repairs of roadway.

Fit both ends of each conduit with a temporary cap to prevent dirt and debris from entering during construction. at completion of the project, all conduit ends shall be bell end type.

Conduit bends/elbows shall be accomplished with a “PVC” coupling as directed and accepted by the supervisor/inspector. this Item is subsidiary to Item 618.

Utility line spotting request shall be done through and by calling Texas811.

Item 628 – Electrical Services

Meet at the service location with City of El Paso maintenance, and the electric utility company at least four (4) weeks before electric power is needed to finalize exact service pole placement and resolve any issues.

Any electrical costs for connection, test, and operation will be the responsibility of the Contractor.

Make all arrangements for electrical service, and for compliance with local standards and practices for proper installation.

Item 644 – Small Roadside Sign Assemblies

Stake all sign locations and receive approval prior to sign placement.

The 2-1/2-inch, Schedule 10 post will meet the following requirements:

- 0.120 in. nominal wall thickness
- Seamless or electric-resistance welded steel tubing or pipe
- Steel will be HSLAS Grade 55 per ASTM A1011 or ASTM A1008

Other steel may be used, if it meets the following:

- 55,000 psi minimum yield strength
- 70,000 psi minimum tensile strength
- 20% minimum elongation in 2 in.
- Wall thickness (uncoated) to be within the range of 0.108 in. to 0.132 in. galvanization per ASTM A123 or ASTM A653 G90

For pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metalizing with zinc wire per ASTM B833.

Verify all post lengths to ensure the proper sign height. Remove and replace any sign installed incorrectly. This work will be done at no expense to the Owner.

Provide Texas Universal Triangular Slip Base clamp type for all signs as shown on SMD (Slip-1)-08.

As directed, some regulatory and guide signs will be relocated before construction begins. Mark and locate each reference marker perpendicular to the road and along the right of way, or as directed, prior to removal. Re-erect reference markers at their original location upon completion of construction.

Item 662 – Work Zone Pavement Markings

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as

directed. Place final striping on these locations. This work shall be considered subsidiary to this Item.

Remove and properly dispose of tabs upon completion of the final striping. This work is subsidiary to this Item.

Place tabs as per TXDOT Standard sheet. Place raised pavement markers in accordance with applicable standards and as directed.

Item 666 – Retroreflectorized Pavement Markings

Use a pilot line for final striping and remove pilot line after all striping is complete. Removal will be in accordance with the methods specified in Item 677, "Eliminating Existing Pavement Markings and Markers," and is subsidiary to this Item.

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as directed. Place final striping on these locations.

Contractor is responsible for conducting reflectivity testing and is subsidiary to this Item.

Item 672 – Raised Pavement Markers

Furnish adhesives that conform to DMS-6100, "Epoxies and Adhesives," and DMS-6130, "Bituminous Adhesive for Pavement Markers," for this Item.

Do not place raised pavement markers when the pavement surface temperature is below 60°F.

Removal of all existing raised pavement markers is subsidiary to this Item.

Item 677 – Eliminating Existing Pavement Markings and Markers

Remove existing raised pavement markings as the work progresses or as approved. This work is subsidiary to the various bid Items. Properly dispose materials removed.

Item 678 – Pavement Surface Preparation for Markings

Air blasting is required as pavement surface preparation and is subsidiary to this Item.

Item 1002 – Landscape Amenity

Boulders are to be installed where shown on plans. Multiple boulders shown in the same area should be partially buried and placed to simulate a natural appearance. The boulder size should vary and some boulders could be placed so that they touch.

Golden Brown is the color and name of the boulder type as approved by the engineer.

- Landscape Amenity Type I – 24"x24" Golden Brown Boulder

- Landscape Amenity Type II – 36” x36” Golden Brown Boulder

See detail F on the Aesthetic and Planting Details sheets for installation information.

Item 1005 – Loose Aggregate for Ground Cover

Aggregate shall be placed in the areas indicated on the plans. The hatch style will determine the type of gravel to be placed. All aggregate shall be placed on the specified vegetation barrier. The top of the mulch shall be placed so that it is 2” below top of curb or top of asphalt if no curb exists. The weed barrier shall be pinned at 3’-0” on center with a 2’-0” overlap at edges and the gravel placed on it immediately to prevent damage to the vegetation barrier from wind or construction activities.

Padre Canyon Red is the gravel type and color.

- Loose Aggregate TY I is 1-1/2” Padre Canyon Red and should be placed at a 3” depth. Finished grade should be 5” below top of adjacent concrete or asphalt surfaces to allow for gravel depth and 2” clearance.

Sierra Brown is a gravel type and color.

- Loose Aggregate TY II is 2”-4” Sierra Brown and should be placed at a 6” depth. Finished grade should be 8” below top of adjacent concrete or asphalt surfaces to allow for gravel depth and 2” clearance.

Loose Aggregate TY III is compacted crushed stone screening and should be placed at a 3” depth. Material shall have a minimum PI of 8, with no loose material, and shall be compacted to 90% per ASTM D-1557.

Secure rock types that are clean and free of debris or foreign materials prior to placement and as approved by the engineer. Rock colors will not be changed without approval by Owner or its designated representative.

Item 6001 – Portable Changeable Message Sign

Provide messages as directed.

Portable Changeable Message Sign to be available as deemed necessary.

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CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

ZARAGOZA POE, PAN AMERICAN DR. & WINN RD. BUILD/IMPROVEMENTS

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0924	06	418	CS

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HIGHWAY: CS

General Notes:

Tests to be in accordance with the Department's Standard Test Methods

Table 1
Compaction Requirements for Base Courses

Item	Description	Outside Roadway Course Density
132[1,2,3]	Embankment (Final)(Density Control) (TY A)	(See Below)

1. **To a depth of 6 in. below natural ground scarify and compact to a 95% minimum.**
2. **From natural ground to 24 in. below finished subgrade, 98% minimum compaction.**
3. **From 24 in. below finished subgrade to finished subgrade, 100% minimum compaction.**

Table 2
Basis of Estimate

Item	Description	Rate
310	Prime Coat (SS-1H)	0.20 gal./sq. yd.
341	Dense-Graded Hot-Mix Asphalt D-GR HMA TY-B PG64-22 D-GR HMA TY-D PG70-22 D-GR HMA TY-B PG70-22	 1.98 Tons/CY 1 in. = 110 #/SY

1. **Deviation from the rates shown will require approval.**

General Requirements

The project consists of new roadway facility, reconstruction and rehabilitation of existing roadway along Pan American Drive and Winn Road from State Loop 375 to Rio Del Norte Drive within the city limits of El Paso, TX.

Maintain the entire project area in a neat and orderly manner throughout the duration of the work. Remove all construction litter and undesirable vegetation within the right of way inside the project limits subsidiary to the various bid Items.

Become familiar with project site prior to submitting bids.

Where night-time work is approved by the Owner, provide adequate lighting for the entire work site as directed, subsidiary to the various bid Items.

Comply with all Occupational Safety & Health Administration (OSHA) and United States Environmental Protection Agency (EPA) regulations as well as all local and State requirements.

Refer to the various traffic control plan project overview sheets for the proposed sequence of work. Changes will not be permitted, except as approved in writing by the Engineer.

Plan datum for this project is NAVD 88.

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Known utility line conflicts are identified on the plans and have been coordinated with the respective utility company. Contractor shall maintain the traffic control during utilities adjustment and/or relocation work.

The Contractor shall inform the Owner or its designated representative and the respective utility companies when it becomes apparent that an unforeseen utility line will interfere with work in progress and shall allow the respective utility company to enter the site and adjust and /or relocate its utility line(s).

Repair all existing pavement, utilities, structures, etc. damaged as a result of the Contractor's operations at no additional cost to the Owner.

Vibratory rollers will not be permitted for use on work within the developed portion of the project. The developed portion includes the entire limits of Pan American Dr., and Winn Rd. from Pan American Dr. to Southside Rd.

A geotechnical study was prepared for this project. The report will serve for general informational purposes only. Actual field conditions may vary.

As-builts (Record) Drawing will be required as follows:

- All Drawings: 4 Sets of 11"x17" and 2 electronic copies in .PDF format submitted on 2 CD's.
- PSB Drawings: 4 sets of 11"x17" and 2 electronic copies in AutoCAD format submitted on 2 CD's.

Item 4L – Scope of Work

Provide vehicular and pedestrian access, at all times, including Saturdays, Sundays, and holidays. Access includes, but is not limited to, driveways, streets, parking areas, and walkways and is subsidiary to the various bid Items.

Schedule and perform all work to assure proper drainage during the course of construction operations. All labor, tools, equipment and supervision required, to ensure drainage, removal, and handling of water is considered incidental work.

Maintain all Contract Items until final acceptance of the project.

Item 5L – Control of the Work

The Owner will furnish horizontal and vertical reference points. The Contractor shall verify all dimensions and grades before proceeding with the work. Report any discrepancies found immediately to the Owner or its designated representative, otherwise the Contractor shall be held responsible for their correctness.

The Contractor shall verify all typical cross-sections prior to commencing construction. The cross sections may be adjusted if necessary to better fit field conditions when approved by the Owner and Engineer.

The Contractor shall pay special attention to the utility sheets, corresponding sequence of work, and shall coordinate field locations of all utilities with the appropriate utility companies, in order to minimize conflicts during construction operations. Damage incurred to any utility, which in the determination of the Owner or its designated representative could have been prevented, shall be

repaired or replaced by the Contractor at his expense as directed by the Owner or its designated representative.

Item 7L – Legal Relations and Responsibilities

Comply with all Federal, State, and Local Laws, ordinances, and regulations that affect the performance of the work. The roadway must be open to traffic at all times. Maintain access to adjacent property at all times. Comply with all requirements of the Environmental Permits Issues and Commitments (EPIC).

Dispose of all waste materials in compliance with Local, State, and Federal regulations. Submit list of all approved waste sites to the Owner for review.

Do not discharge any liquid pollutant from vehicles onto the roadside. Immediately clean spills and dispose in compliance with local, state, and federal regulations to the satisfaction of the Engineer at no additional cost to the Department.

Occupational Safety & Health Administration (OSHA) regulations prohibit operations that bring people or equipment within 10 ft. of an energized electrical line. Where workers and/or equipment may be close to an energized electrical line, notify the electrical power company and make all necessary adjustments to ensure the safety of workers near the energized line.

Any materials not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed.

Item 8L – Prosecution and Progress

Working days are calculated in accordance with Section 8.3.1.4., “Standard Workweek.”

A bar chart schedule is required for this project conforming to Section 8.5.5.1., “Bar Chart.” Provide updates as directed by the Owner.

Prior to beginning operations, schedule and attend a preconstruction conference with the Owner. Provide the Owner a written outline of the proposed sequence of work (Bar Chart Schedule) and an estimated progress schedule.

Keep traveled surfaces used in hauling operations clear and free of dirt or other material.

Maintain thru traffic at all times on Pan American Drive.

Protect from damage and destruction all areas of the right of way, which are not included in the actual limits of the proposed construction areas. Exercise care to prevent damage to trees, vegetation, and other natural features.

Protect trees, shrubs, and other landscape features from abuse, marring, or damage within the actual construction and/or fenced protection areas designated for preservation. Restore any area disturbed or damaged to a condition “as good as” or “better than” prior to start of construction operation. This work will be at the Contractor’s expense.

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No additional costs or delays will incur due to utility conflicts/adjustments.

An overall project Notice-to-Proceed will be issued for the entire duration of the project. Work beyond the total number of working days will results in assessment of Liquidated Damages as per the project specifications.

This project consists of a Construction Sequencing Plan containing phases that will be completed in the order described below:

Table 3
Construction Sequencing

Sequence	Phase	Description of Work	Construction Sequence	Contract Time
1	I & III	Phase I: Winn Rd. Westbound from Pan American Dr. to Rio Del Norte Dr. Phase III: Winn Rd. Eastbound from Pan American Dr. to Rio Del Norte Dr.	Phase I can be constructed concurrently with Phase III	248 Working Days
2	II	Phase II: Pan American Dr. Southbound from State Loop 375 to Winn Rd.	Phase II can be constructed concurrently with Phases I and III	74 Working Days
3	IV	Phase IV: Pan American Dr. Northbound from State Loop 375 to Winn Rd.	Phase IV can be constructed concurrently with Phase I and III, but may not start until phase II is complete.	79 Working Days

Liquidated Damages will be effective for each of the phase sequences and/or milestones if they are not completed during the allowed working days indicated.

Item 9L – Measurement and Payment

Submit Material on Hand (MOH) payment requests at least **five (5)** working days before the end of the month for payment consideration on that month’s estimate.

The cut off date for purposes of monthly pay applications will be 3 working days prior to the end of the month.

Item 100 – Preparing Right of Way

Refer to Specification for additional list of items covered under this Item. All existing concrete curb, riprap, flumes, driveways, asphalt, pavement milling and concrete pavement structures, trees, metal beam guard fence, guardrail end treatments, terminal anchor sections, and other miscellaneous items not specifically quantified on the demolition plans to be removed will be paid under this Item.

This Item will be used to remove the top 5 in. of existing material and soil on the center medians where shown on the plans.

Displaced and/or relocated trees and shrubs shall be paid for under this Item.

Maintain 18-inches of cover during construction for all underground utilities.

All aerial telephone, triplex, conductors, cable, etc. shall remain undisturbed, unless otherwise noted.

Item 104 – Removing Concrete

All work items required to saw-cut the existing concrete sidewalks, driveways, curb and gutter, etc. as shown on the plans, or as directed is subsidiary to this Item.

Item 105 – Removing Treated and Untreated Base and Asphalt Pavement

Use this Item to remove base material and asphalt as shown on the plans.

All removed material shall become the property of the Contractor and shall be hauled off from the site and disposed of properly in accordance with all governing requirements.

Item 110 – Excavation

To eliminate all drop-off conditions, construct tapers as directed. This work will not be paid for directly but will be considered subsidiary to this Item.

All suitable excavated materials shall be utilized, insofar as practical, in constructing the required sections or as directed by the Engineer. Unsuitable roadway excavation and excavation more than that is needed shall become the property of Contractor, to be disposed of off-site, in accordance with local, state, and federal requirements.

Excavate to finish subgrade. Scarify subgrade to a uniform depth at least 6 in. below finish subgrade elevation in areas where base or pavement structure will be placed on subgrade. Manipulate and compact subgrade in accordance with Section 132.3.4., “Compaction Methods.” Compact to 95% relative density in accordance with Section 132.3.4.2., “Density Control.”

Excavation for landscape work shall not be paid for directly but shall be considered subsidiary to the various landscape Bid Items.

Excavation related to retention basin and channel shall be paid for under Item 110-6003 “Excavation (Special)”.

Compaction requirements of side slopes for retention basin and channel shall be as shown on the plans. Work related to this will not be paid for separately but considered subsidiary to Item 110-6003 “Excavation (Special)”.

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Item 132 – Embankment

Scarify and compact top 6 in. of existing roadway as directed before additional embankment or base course is placed, subsidiary to this Item.

Compact the side slopes of the embankment to control erosion work will be subsidiary to this Item.

Use density control to compact subgrade. Subsidiary to this Item.

Item 170 – Irrigation System

Adjustment and/or relocation of existing irrigation system lines as necessary to accommodate the proposed site improvements shall not be paid for directly but considered subsidiary to this Item.

Install a drip system and new irrigation components in the areas shown on the irrigation layout sheets. Special care should be taken to protect plant roots. Install proposed emitters as shown on the Irrigation Details sheet. All work, materials, and labor required for connection are subsidiary to this Item.

Emitter devices are to have 8 units (includes seven removable port plugs) with filter. Features must include: 1/2” (13 mm) threaded device inlet with union base nut to allow removal of the body from riser for easy installation and maintenance; Eight independent ports, each capable of accepting a emitter or for independent flows from 0.5 to 24 GPH (1,89 to 90,96 lph), or a self-piercing barb connector (SPB-025) for unrestricted flow; Eight barbed outlet ports mounted on bottom of device capable of securely retaining 1/4” (6,4 mm) distribution tubing; 200 mesh (75 micron) filter, easily serviceable from top of unit. The device must be capable of being used with retrofit in stem pressure regulator. Pressure regulation is required at the emitter device.

The In-Stem Pressure Regulator must be capable of being used with emitter device on ½” pipe. It must regulate to 30 PSI (2.1 bar) pressure regulation at the riser for any ½" FPT emission device or compression adapter.

The Adjustable Check Valve must be capable of being used with emitter device on ½” pipe as shown in the detail. It must be made of PVC type i material stainless steel spring, bolt, & washer epdm o-ring neoprene washer. It is rated @ 150 PSI static pressure @ 72°F. The adjusting nut 1 turn = 1 PSI is factory set at 5#.

The Emitters shall have external surfaces constructed from UV resistant acetyl materials. They are self-flushing to minimize clogging and color-coded to identify flow rate. The red emitter indicates a flow rate of 2.0 GPH Pressure-compensating over the pressure range of 15 to 50 PSI (1,0 to 3,5 bar) with consistent flow rate of 2.0 GPH over this pressure range.

Polyethylene Microtubing must be manufactured from premium linear low-density polyethylene. It must accept insertion of 2 gph emitters and hold firmly.

The Emitter Box shall be a minimum height of 9 1/2 in. The top diameter is 6 in and the base diameter is 8 in. It shall have UV-resistant thermoplastic construction. It should provide access to subsurface drip emitters while protecting against vandalism. Knock-outs or openings for microtubing must be on the sides. The sides must be corrugated. The lid snaps securely into place. Interlocking bottoms allow boxes to mate securely together bottom-to-bottom for deep installations. Deeper valve boxes will be required for emitter devices due to additional components in stem. Lid must be locking or vandal resistant.

The Valve Box and Cover shall be made of structural foam HDPE resin that is resistant to UV light, weather, moisture, and chemical action of soils. The standard rectangular body shall have knock-outs molded into the sides. The knock-outs shall remain an integral part of the body unless removed to run pipes or wires through the valve box.

Valve Boxes shall have corrugated sides. Extension models shall have vertical ribs inside that make them capable of being mounted directly over the top of another box. Boxes shall have a stepped feature on the bottom that securely interlocks two boxes together when mated bottom-to-bottom for use in a deep installation. Lid must flush mount and bolt down locking. Use tan color for box and lid.

The Electric Remote Control Valve shall be a normally closed 24 VAC 50/60 Hz (cycles/second) solenoid actuated globe/angle pattern design capable of having a flow rate of 18 gpm flow with a pressure loss not to exceed 2.6 gpm. The valve pressure rating shall not be less than 150 PSI (10,35) Bars. The valve body and bonnet shall be constructed of high impact, weather resistant PVC with stainless steel screws. The valve shall have manual open/close control (internal bleed) for manually opening and closing the valve without electrically energizing the solenoid. The valve shall house a fully-encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing, and a leverage handle for easy turning. The solenoid shall be compatible with the battery operated controller that is used in this project. The valve shall have a flow control stem for accurate manual regulation and/or shut off of outlet flow. The valve must open or close in less than 1 minute at 150 PSI (10,35 bar), and less than 30 seconds at 20 PSI (1,38 bar). The valve construction shall provide for all internal parts to be removable from the top of the valve without disturbing the valve installation. The body shall have a removable 0-ringed plug for installation in either globe or angle configuration.

The Basket Filter shall provide for continuous filtration of the drip zone. It shall be pressure rated to minimum 150 PSI. and shall incorporate a stainless steel screen element with a basket design. The screen element shall be reinforced with polypropylene ribs to increase durability and the screen element shall be color-coded. The body of the unit shall be constructed of impact resistant glass-filled polypropylene and the cap of glass-filled nylon with a UV resistant polyurethane indicator window. The unit shall incorporate an indicator window that shows when the filter needs to be cleaned. Operating Range Flow 3/4” Basket Filter: 0.20 to 12.0 GPM (45,4 to 2725 l/h); 1” Basket Filter: 3.0 to 20.0 GPM (681 to 4542 l/h); Pressure 15-150 PSI (1,0 to 10,3 bar);Temperature Up to 150º F (66º C). The basket filter is non – pressure regulating.

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An Air Vacuum Release Valve must be set at high points of laterals or one every half mile in pipe runs with little elevation change. It must have a PVC seat with stainless interior components. It is operated by compound lever system and has rubber valve and cast-iron top. Do not use release valves meant for subsurface drip system.

The Battery Operated Controller shall be programmable by a separate field transmitter device only. The program shall be communicated to the control module from the field transmitter via an infrared connection. The controller shall be of a module type, which may be installed in a valve box underground. It shall function normally if submerged in water and the communication from the transmitter shall function if submerged in water. It shall be housed in an ABS plastic cabinet and shall be potted to insure waterproof operation. The battery compartment shall be dual-sealed to prevent water from entering the compartment. The controller shall operate on one nine-volt alkaline battery for one full year regardless of the number of stations utilized. The controller shall have station run time capability from one minute to twelve hours in one-minute increments, a 365-day calendar and three programs with eight start times each and shall be capable of independent program operation using a seven-day cycle. It shall turn on stations via latching solenoids installed on the valves and capable of manual single station or manual program operation. Valve solenoid and controller must be compatible.

The Field Transmitter shall be water resistant and housed in ABS plastic and have a removable, reversible protective sheath. It shall operate on one 9V alkaline battery and have a large LCD screen and a seven-key programming pad. A beep sound shall confirm every keystroke. The screen shall automatically turn off after one minute when not in use. It shall be capable of programming an unlimited number of control modules and have a low battery indicator capable of indicating low battery voltage in the field transmitter or control module.

PVC Glue and Primer must meet ASTM D 2564 Standard *ƒ* Meets SCAQMD Rule 1168/316A *ƒ* Compliant with LEED® *ƒ* Listed by NSF International for compliance with ASTM D 2564, NSF/ANSI Standard 14 and NSF/ANSI Standard 61 for use in potable water applications. *ƒ* Meets CSA standards B137.3 and B181.2 for use in pressure and non-pressure potable water, drain, and vent applications. *ƒ* Listed by IAPMO for compliance with ASTM D 2564 and applicable sections of the latest edition of the Uniform Plumbing Code® specifications: color: gray resin: pvc specific gravity: 0.966 ± 0.04 BROOKFIELD VISCOSITY: Minimum 1,600 cP @ 73° ± 2°F (23° ±

The Backflow Enclosure must meet ASTM B209. B. ASSE 1060 class II-Performance Requirements for Outdoor Enclosures for Backflow Prevention Assemblies. The roof, walls & panels of the enclosure shall be constructed of 5052-H32 (.050/18 gauge) marine grade aluminum, mill finish, ASTM B209 outside with insulation 1 1/2" thick in the walls (9.0 "R" value) or greater. It must be lockable.

The Backflow Insulation Blanket and backflow enclosure must have a minimum combined R value of 25. The blanket material: 22 oz. UV and fire resistant polyvinyl with an insulation core and polyfill insulation. The sewing thread is double-stitched UV-resistant nylon. The blanket shall have been tested to maintain water flow in static lines up to 10 hours in zero-degree temperature.

Provide Schedule 80 PVC rated for direct sunlight exposure for all above ground pipe including risers and swing-joint components.

It is the Contractor's responsibility to verify water pressure, water source and size in the field prior to construction. Measure pressure on outflow side of meter and provide information to the Owner to verify system function.

Design pressure should be between 50-60 psi. Should a discrepancy exist between design pressure and field pressure, the Landscape Architect shall be notified immediately. Do not proceed with irrigation work until notified by the Owner or its designated representative.

Drawings are generally diagrammatic and indicative of the work to be installed. All irrigation components are to be located in landscape areas, not paved areas. Components may be shown outside of planting areas for legibility. Alternate plans submitted by the Contractor must be sealed by a Licensed Irrigator and submitted for approval.

Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, and sleeves that may be required. Investigate site conditions affecting all work and plan accordingly, furnishing such offsets, fittings, borings, and sleeves as may be required to meet site conditions as directed. This work and materials are subsidiary to this Item.

Contact and coordinate with City of El Paso, Streets and Maintenance and the El Paso Water Utilities to verify meter locations prior to installation. Obtain all required permits and licenses and pay all fees necessary for the installation and operation of the proposed irrigation system subsidiary to this Item.

The Contractor shall stake the location of all trees prior to trenching. Tree location takes precedence. Trenching through root balls is not allowed. Trenches must be 24" minimum away from tree trunks. Stake out emitter units and piping locations prior to trenching. After approval by the Landscape Architect, equipment installation may begin.

All piping/wiring running beneath paved surfaces (drives, walks, etc.) shall be installed in schedule 40 PVC sleeves which are at least 1" larger than all pipe contained in sleeves or sleeves must be 2 x the diameter size of pipe encased, whichever is greater. Mark ends of sleeves on curbing or sidewalks. Extend sleeve twenty-four inches (24") beyond edge of hard surfaces; wrap ends with minimum 4 mil plastic and tape with heavy duty plastic tape or approved equal. Gray cloth duct tape is not acceptable.

If sleeving is omitted, install the irrigation system using the bore method when crossing existing roadways and driveways as directed. All bores are subsidiary to this Item.

All pipe cuts shall be mitered to 90 degrees to assure proper solvent weld. All burrs shall be removed prior to gluing and must have a filed beveled edge a minimum of one fourth (1/4) the width of pipe wall. Pipe must be cleaned with PVC cleaner and primer applied as recommended by manufacturer when gluing process is undertaken. Primer should be moist as glue is applied and PVC piping is assembled. Use primer. Use gray glue heavy duty. When pipe is set in socket

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give 1/4 turn. Wipe off all excess cement and let set per manufacturer's recommendations. Initial set times shall be minimum of 5 min. For 1/2 to 1-1/4" pipe; 8 min. For 1-1/2" pipe to 2" pipe; 2 hours for 2-1/2"to 6" pipe. Cure times are 20 min for 1/2" to 1-1/4" pipe; 30 min. For 1-1/2" pipe; 4 hours for 2-1/2" pipe. When humidity exceeds 60% increase cure time by 50%. Once weld is set, pipe shall not be moved for any reason until set times have been achieved. Water shall not be turned on until all cure times have been achieved.

The Owner or its designated representative must be present during all flushing, testing and adjusting. The Contractor must provide 24-hour notice to the Engineer prior to conducting the tests. Flushing must be performed prior installing dripline. Hydrostatically test irrigation main line and laterals for a 24-hour period and present the results in writing to the Owner or its designated representative. Secure approval for any alternative locations before installation.

The finish grade of all trenched areas shall be smooth, even and consistent, free of any humps, depressions or other grading irregularities. Overfill trenches and compact so not to crush the pipe. Inspect trenches for settling and backfill and regrade if necessary. Remove and dispose of rocks larger than 1-inch.

Repair any damages caused by construction efforts to the existing irrigation.

Perform irrigation system work under the supervision of a person possessing an irrigator’s license issued by the TCEQ and provide documentation of this license. Ensure that all zones are functioning properly and providing adequate moisture to maintain healthy plants using an approved watering schedule. Repair system using replacement parts of the same type and manufacturer as originally installed or approved equal. Provide plant irrigation by an approved alternate method at no cost to the Department if the system fails due to the Contractor’s actions or neglect. This work is subsidiary to this Item.

Do not willfully install the irrigation system as shown on the plans when it is obvious in the field that obstructions, grade differences, discrepancies in area dimensions, or conflict between plans and the irrigation design exist, notify the Owner or its designated representative in writing. Consider this work incidental to the project. Contractor will assume full responsibility in the event this notification is not performed.

Do not proceed with installation of conflicting irrigation components until written clarification is received.

Watering time: set per local watering codes. Initially set the controller for 40 min.3 times per week. Increase run time if needed if plants appear stressed.

Fine tune and adjust the irrigation system so that no water runs onto the street or walks. If necessary, use multiple run times with 2-hour soak times in between cycles. Do not decrease total run time per week.

Maintain all work until it is complete and accepted. The maintenance and plant establishment period begin after work is accepted. Warranty/maintenance period is one year from date of acceptance.

At the final walkthrough inspection upon completion of the project, furnish a set of 11x17 as-built plan sheets prepared by a qualified draftsperson. Show all system changes, rerouting of main and lateral lines, size of water meters installed along with the location address and meter number. Provide any manufacturer literature and warranty documents for the irrigation system components for submission to the agency responsible for maintenance. Submit a copy of the backflow test report and provide irrigation system operation manuals and controller transmitter to the City of El Paso Street and Maintenance Representative. This work is subsidiary to this Item.

Irrigation system must be installed and operational prior to planting.

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), P.O. Box 22. 13087, Austin, TX 78711. Contractors must follow requirements of TCEQ. Include instructions covering full operation, care, and maintenance of the equipment. Instruct designated personnel in proper operation of the system. Plans must be on site at all times. A licensed irrigator must oversee the work.

Inspect the irrigation system and make repairs every two weeks or upon notification by the City of El Paso. Periodic adjustments of the irrigation system controllers may be required if run-off occurs or the plants are not in a healthy growing condition. The Contractor shall contact the City of El Paso Arborist if more than 5 trees appear to be in a stressed condition. The Contractor shall inspect the base of the plants and trees to confirm that the plants are receiving water. Replace any emitters that seem to be clogged.

Item 192 – Landscape Planting

Protect newly graded areas from traffic and erosion.

Refer to plans for utility locations. Gas lines cross planting areas. Do not machine excavate within 5’ of gas lines. Do not place tree root balls within 5’ of gas lines. Relocate trees with insufficient clearance from gas lines.

The terms “vegetative barrier” and “weed barrier” shall be used interchangeably.

Plant maintenance period is 1 year, unless otherwise directed by the Owner.

Plant material, quality, size, and condition at nursery and when delivered at job site will be in accordance with American Standard for Nursery Stock, current edition, as published by The American Association of Nurserymen and the Texas Association of Nurserymen requirements. Provide written assurance that all materials necessary to complete the project as specified have been located 60 days prior to installation.

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Plant material substitutions are not allowed without the written permission of the Landscape Architect. Requests for substitutions must be submitted no later than 2 weeks prior to the initiation of work. The sum of materials differing in kind and quality or size from that specified will be allowed only after proving that all means of obtaining and specified materials have been exhausted.

Trees and shrubs must meet the size requirements indicated on the legend. The Contractor may substitute a larger size due to availability but at no additional expense to the Owner. Substitutions will only be allowed only after proving that all means of obtaining specified materials have been exhausted. Provide list of nurseries contacted when requesting substitutions.

Provide nursery grown plants that are tagged with nursery labels indicating species and variety. Remove nursery tags after acceptance of planted material at site. Nursery invoice may be requested by the City of El Paso Arborist or Landscape Architect for further verification.

Photos of plant material from out of town nurseries may be submitted for approval. For trees, submit photos showing overall form and another photo close up of the caliper being measured at the base. The City of El Paso Arborist or Landscape Architect still has the right of refusal at the site inspection.

The City of El Paso Arborist or Landscape Architect will be the judge of the quality and acceptability of all plant materials. All rejected material will be immediately removed from the site and replaced with acceptable materials as specified under this Item and no additional cost to the Owner.

Trees and shrubs in leaf delivered to the site shall be covered with a canvas tarp during transport. Plastic tarps are prohibited. Plants may be transported to the site in an enclosed vehicle but must be unloaded immediately upon arrival.

Do not lift trees by the trunk. Lift by container.

Provide plants typical of their species or variety and have normal, well developed branches and vigorous root systems that are sound, healthy, free from defects, disfiguring knots, abrasions or the bark, sunscald injuries, plant diseases, insect eggs, borers and all other forms of infections.

Provide plant material that has a uniform shape around its complete circumference. Plant material with irregular branching patterns or with branching patterns more highly developed on one side than the other sides are not acceptable. Do not select trees with low fork branching pattern. Minimum height is 10'. Caliper is measured at 6" above the top root at the base of the trunk. Unless specifically noted on the plans, provide single-trunk trees that are straight, free of “dog-legs,” “crooks,” “y-crotches,” or other disfiguring shapes, and that the central leader has not been pruned. Trees with double leaders are not acceptable unless specified as multi-trunked.

Ensure that container grown plant material has been established in its delivery container no less than six months but not more than two years. Root-bound material will not be accepted.

Use weed barrier specified on plans beneath areas receiving rock mulch.

Protect existing plants to remain within the work zone with orange plastic tape fence and stakes, or as directed. Materials and labor are subsidiary to this Item.

Prior to construction, meet with the City of El Paso Arborist in the field to review status and intentions for existing trees in project area. Flag existing trees designated in the plans to remain for identification and treat as described below.

Existing plant material damaged during construction activities will be replaced with a similar type and size of plant at no additional cost to the Department.

Install stakes and flagging around existing trees at the drip line (end of branches). Do not use machinery to remove gravel. Gravel must be removed by hand within the drip line of existing trees.

Protect tree root systems from damage due to: noxious materials caused by runoff or spillage while mixing, placing or storing construction materials; flooding, eroding, or excessive wetting caused by watering operations.

Remove all wire, string, wire baskets, burlap, containers, etc. From the root ball of plants before backfilling the planting hole. Set plant material in planting pit to proper grade and alignment. Set plants so that the root ball is flush with finished grade. The top root where it meets the trunk is an indicator for planting depth.

Use native soil to backfill planting pit that is free from clay, lumps, coarse sand, stones over 1", plant roots, or other foreign materials. Remove impervious soil and large rocks. Water in to prevent air pockets and settling. Form a ring of soil around plants that are located on a slope to retain water.

Contact the Owner or its designated representative if impervious soils are encountered. The Owner or its designated representative may decide on a new location for the tree/plant or may require planting to proceed. See planting detail on detail sheets for more information for planting in impervious soils. Use soil stockpiled from planting pits for backfill for plants in impervious soils.

The finished grades of all planting areas shall be smooth, even, and free of humps, depressions or irregularities. See details to determine finish grade adjacent to concrete areas and walkways to allow for mulch thickness (if mulch is specified).

It shall be the Contractor's responsibility to prevent plants from falling or being blown over. Straighten and stake trees using guying method shown on the aesthetics detail sheet. Replace trees damaged due to lack of or improper staking at the Contractor's expense and at no additional cost to the Owner.

Rabbit fencing for tree and plant protection is incidental to the tree and plant installation. Use three (3) layers of poultry netting when wrapping trees and plants. Staple netting to wooden

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surveyor stakes for plants. Hammer landscape staples through all layers into the ground. Place 2 staples between each plant surveyor stake for plants and 1 staple every 6" in mesh around trees. See details for tree and plant rabbit protection on the aesthetic detail sheet. The work performed, and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "192-6004 Plant and 192-6074 Tree installation." This price is full compensation for furnishing all materials, equipment, labor, and incidentals.

The materials required for the Rabbit Protection are as follows:

A. 12" x 1" x 12" 8 gauge galvanized steel landscape staples.

B. Poultry Netting - 1" hexagonal mesh weave. Zinc-Coated steel. Galvanized. 24" height

C. Surveying Wooden Grade Stakes ¾" x 1-1/2" x 24"

The location of traffic signage takes precedence over tree placement. With permission from the Owner or its designated representative, relocate trees as needed so not to obstruct views or conflict with proposed signage locations. Verify sign placement prior to planting. Do not place center of plants with 4' of curb or edge of asphalt.

Do not dump gravel over plants or bury plants in gravel. See details for gravel placement adjacent to plants on the aesthetic detail sheet.

Irrigation system must be installed and operational prior to planting.

Contact El Paso Street and Maintenance Department and City Arborist for inspections of the following:

A. Tree review prior to installation. Provide notification when plant material is available for inspection at the nursery: prior to delivery, before and after planting at the job site.

B. Plant placement, prior to installation of mulch

C. Final walkthroughs. Brent Pearson - City Arborist, 915 212-1848 and

Harold Kutz - Engineering Division Manager, 915 212 7044

Comply and follow vegetation maintenance during the required establishment period as stated under Item 193.

Item 193 – Landscape Establishment

Maintenance of new trees, shrubs, and ground cover begins immediately after all requirements under Item 192 has been completed and accepted and continues for 12 months.

Herbicide applications are required, subsidiary to this Item. Exercise care when applying herbicide, any damage incurred due to Contractor negligence will be Contractor's responsibility.

Fertilize all plants during the 12-month maintenance period as needed per season or as directed. Fertilizer and the application labor is subsidiary to this Item.

Five-gallon plants and thirty-gallon trees will be replaced if more than 1/3 of the branches have died or as determined by the Engineer. The plants and trees shall be replaced with the same type and size as originally specified. If the same type and size is not available contact the Engineer for instructions.

On a monthly basis, the Contractor shall inspect and adjust or reinstall as needed, the tree and plant protection to prevent damage from rabbits. Enlarge the fence perimeter to prevent the plant material growing through the fencing.

At the end of the 12-month landscape establishment period the Contractor will remove the tree and plant protection.

Item 247 – Flexible Base

Preparation and compaction of the subgrade is considered subsidiary to this Item. Subgrade to be Compacted to 95% relative density in accordance with Section 132.3.4.2., "Density Control."

Payment for this Item will be measured as shown on plans.

Item 276 – Cement Treatment (Plant-Mixed)

Payment for this Item will be measured to back of curb unless otherwise noted on the plans.

Item 310 – Prime Coat

Prepare and treat existing or newly constructed surface with a bituminous material as shown or as directed by the Owner or its designated representative. Apply blotter material as required.

Cure prime coat on the cement-stabilized material for at least 48 hr. prior to beginning hot-mix asphalt placement operations.

Item 341 – Dense-Graded Hot-Mix Asphalt

Do not cover any existing survey monuments, manholes or valve covers, etc. with asphaltic material.

Place a string line or other suitable marking to ensure smooth, neat lines, or as directed.

The construction of the final riding surface at phase limits shall be completed at once in order to provide a seamless transition.

The application of the tack coat and/or prime coat shall not be paid for separately but considered subsidiary to this pay Item.

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All utility and storm water junction boxes, manholes and covers and any other pavement penetrations within the asphalt pavement section shall have a concrete penetration apron as shown on the plans. This work shall be considered subsidiary to this Item.

Do not use diesel or solvents as asphalt release agents in production, transportation, or construction. A list of approved asphalt release agents is available from the district laboratory.

No more than one hot mix lot will be open for any specific type of hot mix, unless authorized. After a lot is open and the Contractor gets approval to change plants, the previous lot will be closed, and a new lot will be opened. The numbering for the lots produced at the new plant will start with No. 1. If allowed to switch back to the original or previous plant, the next lot from that plant will resume numbering sequentially from the last lot produced by that plant.

Prepare the surface by removing raised pavement makers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges.

Apply an antistripping agent to asphaltic concrete pavement in accordance with this Item 301, "Asphalt Antistripping Agent" as directed. Materials are subsidiary to this Item.

Payment for this item related to the pavement reconstruction limits of Winn Rd. and Pan American Dr. are measured to the back of curb. Payment for this item within the pavement rehabilitation (resurfacing) limits of Pan American Dr. are measured to the gutter.

Item 351 – Flexible Pavement Structure Repair

This item shall be used for areas called out on the plans as temporary pavement. Subgrade to be Compacted to 95% relative density in accordance with Section 132.3.4.2., "Density Control."

Payment for this Item will be measured to edge of pavement unless otherwise noted on the plans.

Item 360 – Concrete Pavement

Use Class P, Type II Cement for this Item unless otherwise approved by the Owner and Engineer.

A pre-paving meeting will be required. Submit a paving plan detailing the location of joints and the sequence of paving for approval to the Engineer at least seven days before the pre-paving meeting.

A minimum of two additional sets of cylinders will be required for early-strength determination when concrete placement is at one of the specified locations, which requires opening to traffic immediately after 72 hours of placement. Once the required design strength has been attained as determined by Compressive Testing.

Only multiple piece tie bars, as described in Section 360.2.2.2, "Tie Bars," and as noted on Standard sheet CRCP (1)-17 "Continuously Reinforced Concrete Pavement," will be used at longitudinal construction joints and only threaded couplings will be permitted for these tie bars.

New concrete pavement paving adjacent to existing concrete paving will require a neat saw-cut edge and drilling as per Item 361, "Repair of Concrete Pavement," regardless whether transverse or longitudinally. This work is subsidiary to this Item.

When freezing weather or windy conditions in excess of 25 mph are forecasted to occur within 12 hours from the last CRCP placement of the day, cover and protect the entire CRCP placed that day with cotton blankets and polyethylene fill immediately after the membrane curing has been applied. Place and weigh the film so it will remain in direct contact with the surface for a period of 48 hours and to the satisfaction of the Engineer.

Place longitudinal joints at a minimum distance of 6 in. from the lane lines to minimize any conflicts with the pavement markings. Ensure that these joints do not fall within the anticipated wheel path area.

Use poured joint sealer Class 4 on all sawed joints. This work shall be considered subsidiary to this Item.

Where proposed concrete pavement abuts existing concrete pavement, the placing of the tie bars shall be approved by the Owner or its designated representative.

Seal pavement surface with two coats of the specified type of curing compound. Each coat shall be applied uniformly at the rate of coverage recommended by the manufacturer and directed by the Owner or its designated representative, but not less than one gallon per 180 square feet of surface area per application within thirty (30) minutes of placing concrete.

Payment for this Item will be measured to back of curb unless otherwise noted on the plans.

Item 400 - Excavation and Backfill for Structures

Use this pay Item for hauling excess material and shall include off-site disposal.

Item 401 – Flowable Backfill

Additional flowable backfill for over-excavated will not be paid for.

Item 402 – Trench Excavation Protection

Use this Item to pay for trench excavation protection for the storm drain system only to include all inlets, manholes and headwall structures.

For excavation depths greater than 5-ft, OSHA requires a trench excavation protection system. Contractor shall provide such system in accordance with the current osha requirements. Trench excavation protection systems requiring an engineering seal shall be from an engineer licensed in the state of Texas bearing the signature and seal of a registered professional engineer for approval to the Owner or its designated representative prior to excavation and shoring work.

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Item 416 – Drilled Shaft Foundations

Stake all foundation locations and secure approval by the Owner or its designated representative prior to commencement of drilling operations in order to ensure no conflicts with utility lines. Coordinate with the Utility companies for utility location within the project limits. Repair any damage to existing utilities to the satisfaction of the utility Owner at no additional cost to the Owner.

Use Class "C" concrete.

Cover drilled shafts with plywood and delineate them with cones, to the satisfaction of the Owner or its designated representative, when not working in them and after work hours.

Replace faulty anchor bolts as directed. Do not weld anchor bolts.

Remove spoils, daily, out of the drainage areas or as directed.

Provide a formed smooth finish for all portions of drill shafts extending above proposed ground subsidiary to this Item.

Pole foundations will be paid for once, regardless of extra work caused by obstructions.

Concrete removal required for installation of drilled shaft is subsidiary to this Item.

Item 421 – Hydraulic Cement Concrete

Furnish and properly maintain all test molds. Furnish test molds meeting the requirements of Tex-447-A and Tex-448-A. The test molds must be ready for use when needed. The Contractor will be responsible for curing and transporting concrete specimens as directed. Furnish proper equipment to remove concrete specimens from the molds. For all concrete items, provide a wheelbarrow or other acceptable container to the Owner or its designated representative. This work is not paid directly and is subsidiary to this Item.

Test Method Tex-418-A is allowable for 7-day job-control tests.

Obtain approval for all concrete mix designs and concrete aggregate sources.

Provide sulfate-resistant concrete for all structural concrete in contact with soil or groundwater.

Concrete trucks will not be allowed to wash-out or discharge surplus concrete or drum-wash water on the project site.

For the purpose of sampling and testing only, all Class "A" and "B" concrete shall be defined as miscellaneous concrete.

All concrete designs and concrete aggregate sources shall be approved by the Owner.

Item 432 – Riprap

Provide Type II cement and Class A concrete.

Reinforce all concrete riprap using bar reinforcement conforming to Item 440, “Reinforcement for Concrete,” as shown on the plans, or as directed.

Finish concrete riprap with a smooth (wood float) finish, unless otherwise directed.

Obtain approval for all stone riprap material sources.

Stone riprap shall be dry loose rock, and in accordance with the specification with Item 432, “Riprap,” for slope protection.

Item 442 – Metal for Structures

Prepare and submit the field erection drawings in accordance with Item 441, “Steel Structures,” for approval prior to construction. Show details for additional temporary lateral bracing to be used to secure plate girders from wind loads during erection and construction on the field erection drawings. Additional temporary shoring may include, but is not limited to guy wires with deadman anchors, etc. Temporary lateral bracing may be removed upon approval. Temporary lateral bracing is subsidiary to this Item.

Item 464 – Reinforced Concrete Pipe

Use Class III circular pipe for all proposed reinforced concrete, unless otherwise shown on the plans.

Use rubber gaskets conforming to ASTM C361 or C443 as jointing material for concrete pipes.

Coordinate locations of all utilities and corresponding sequence of work. Repair any damage to existing utilities to the satisfaction of the utility Owner at no additional cost to the Owner.

A 3/4-inch plywood board shall be used to plug the reinforced concrete pipe where required, as directed by the Owner or its designated representative. All labor, materials and incidentals required to accomplish such work shall be considered subsidiary to this Item.

All temporary pipe required to bypass storm water flows at construction phase interfaces will not be paid for directly but considered subsidiary to this Item. This includes installation, removal and/or repair. The Owner or its designated representative shall approve all temporary pipe prior to ordering and installation.

Granular pipe bedding material shall consist of the following physical characteristics:

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Table 4
Granular Pipe Bedding Material

Sieve size (square openings)	Percent passing by weight
3/8-inch	100
No 200	0-12

The granular bedding shall be non-plastic as determined in accordance with ASTM d 4318. The material shall be free from roots, grass or other vegetable matter, clay lumps or other deleterious materials.

Trench backfill material shall consist of the following physical characteristics:

Table 5
Trench Backfill Material

Sieve size (square openings)	Percent passing by weight
3 inch	100
3/4 inch	70-100
No. 4	40-100
No. 200	5-40

The plasticity index of the backfill material, as determined in accordance with ASTM D 4318, shall not exceed 15. The trench backfill shall be free from roots, grass or other vegetable matter, clay lumps or other deleterious materials.

Additional flowable backfill for over-excavated areas will not be paid for.

Item 465 – Junction Boxes, Manholes, and Inlets

Field verify all low-point locations prior to their construction. Obtain approval for any necessary adjustment.

Where inlets may be exposed above the natural ground upon completion, place embankment around them to drain as directed. All such work will be considered subsidiary to this Item.

Coordinate all inlet locations and elevations with the project cross-sections and verify prior to their construction.

Place pedestrian fence around all incomplete junction boxes, inlets and manholes to protect pedestrians in the surrounding area, as directed, subsidiary to this Item.

All required structural excavation, frames, grates, rings, cover and other incidentals shall not be paid for directly, but considered subsidiary to this Item.

Contractor shall utilize non-shrink grout to seal joint between RCP and drainage structures. The cost for this Item shall be incidental to the other various drainage bid Items.

All temporary junction boxes, manholes, and/or inlets required to bypass storm water flows at construction phase interfaces will not be paid for directly but considered subsidiary to this Item. This includes installation, removal and/or repair. The Owner or its designated representative shall approve all temporary pipe prior to ordering and installation.

Concrete Class "B" invert shaping is required at all inlets, manholes and junction boxes in order to ensure positive flow. The material and work performed for the placement of the inverts shall be considered subsidiary to this Item.

Additional flowable backfill for over-excavated areas will not be paid for.

Item 467 – Safety End Treatment

The Safety Grate shown on the plan details shall be paid for under Item 466-6447 "SET (TY II) (36 IN) (RCP) (2: 1) (P)"

Item 471 – Frames, Grates, Rings and Covers

All grate and frame elevations shall be coordinated with the project cross sections and storm sewer system layouts.

All required frames, grates, rings, covers and other incidentals shall not be paid for directly, but considered subsidiary to Item 465.

All storm sewer manhole covers shall be as per the City of El Paso standard shown on the plans.

Item 479– Adjusting Manholes and Inlets

Coordinate with respective utility Owners before adjusting existing utility manholes, meters, valve covers, etc.

Coordinate to complete all required adjustments within project duration acceptable to the Owner and each applicable utility Owner.

Locate and reference all manholes and valves within the construction area with station and offset. Each manhole and valve shall be identified by its Owner (saws, cps, etc.). No roadwork will begin until this list has been submitted. Gas valves have to be accessible at all times, therefore; temp. CTB, material stock piles, etc. Cannot be placed over these valves.

Construct all manholes and valves to final pavement elevations prior to the final mat of ACP. If, between the final elevation adjustment and the final mat of ACP, the manholes and valves are going to be exposed to traffic, place temporary asphalt around the manhole and valve to provide a +/- 50:1 taper. The cost of elevation adjustment will be part of the manhole and valve work, and asphalt tapers are part of the ACP work.

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Water and sanitary sewer service lines and meters to be field located and adjusted to match proposed grade. Coordinate with utility for reconnection and relocation. This work shall be considered subsidiary to this Item.

Item 502 – Barricades, Signs, and Traffic Handling

Prior to beginning construction, the Contractor will submit for approval the routing of traffic and sequence of work.

Additional signs and barricades, placed as directed, will be considered subsidiary to this Item.

All TMA Operators must participate in a TMA workshop to be conducted by the El Paso District Safety Office, on the proper use of TMAs, prior to working on Department Right of Way (ROW). A certificate of completion will be issued to TMA Operators that successfully complete the TMA workshop. The certificate of completion must be carried by TMA Operators at all times while working on Department right of way.

In accordance with Section 7.2.6.1, designate, in writing, a Contractor Responsible Person (CRP) and a CRP alternate to take full responsibility for the set-up, maintenance, and necessary corrective measures of the traffic control plan. The CRP or CRP alternate must be present at site and implement the initial set up of every traffic control phase/stage, at each location, and/or each call out, for the entire duration of the project.

At the written request of the Engineer, immediately remove the CRP or CRP alternate from the project if, in the opinion of the Engineer, is not competent, not present at initial TCP set-ups, or does not perform in a proper, skillful, or safe manner. These individuals shall not be reinstated without written consent of the Engineer.

CRP and CRP alternate must be trained using Department approved training. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 1 for Department approved Training.

Table 6
Contractor Responsible Person and Alternate

Provider	Course Number	Course Title	Duration	Notes
American Traffic Safety Services Association	TCS	Traffic Control Supervisor	2 days	
National Highway Institute	133112 133113	Design and Operation of Work Zone Traffic Control Work Zone Traffic Control for Maintenance Operations	1 day 1 day	Both courses are required to meet minimum required training.
Texas Engineering Extension Services	133112A	Design and Operation of Work Zone Traffic Control	3 days	
University of Texas Arlington Division for Enterprise Development	WKZ421	Traffic Control Supervisor	16 hours	Contact UTA for training needs.

All Contractor workers involved with the traffic control implementation and maintenance must participate and complete a Department approved training course. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 2 for Department approved training.

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Table 7
Other Work Zone Personnel

Provider	Course Number	Course Title	Duration	Notes
American Traffic Safety Services Association	TCT	Traffic Control Technician	1 day	
Texas Engineering Extension Services	HWS002	Work Zone Traffic Control	16 hours	Identical to HWS-410. Counts for 3-year CRP requirement.
National Highway Institute	133116	Maintenance of Traffic for Technicians	5 hours	Web based
National Highway Institute	134109-I	Maintenance Training Series: Basics of Work Zone Traffic Control	1 hour	Free, Web based
University of Texas at Arlington, Division for Enterprise Development	WKZ100	Work Zone Safety: Temporary Traffic Control	4 hours	Note name change. Free, Web based
TxDOT/AGC Joint Development	N/A	Safe Workers Awareness Highway Construction Work Zone Hazards	16 minutes 18 minutes	Videos available through AGC of Texas offices. English & Spanish
AGC America	N/A	Highway Work Zone Safety Training	1 day	
Texas Engineering Extension Service	HWS400	Temporary Traffic Control Worker	4 hours	Contact TEEX, if interested in course
TxDOT/AGC Joint Development	N/A	Work Zone Fundamentals	10 minutes	Videos available through ACT of Texas offices. English & Spanish

Contractor may choose to train workers involved with the traffic control implementation and maintenance with a Contractor developed training in lieu of Department approved training. Contractor developed training must be equivalent to the Department approved training shown in Table 2. Provide the Engineer a copy of the course curriculum for pre-approval, prior to conducting

the Contractor developed training. Provide the Engineer a copy of the log of attendees after training completion for project records.

Acquire the TCP and TMA Operator's certificates of completion prior to the authorization to begin work. No time suspension will be granted, and no traffic control work will be allowed without certificates of completion.

Existing regulatory signs, route marker auxiliaries, guide signs, and warning signs that must be removed due to widening shall be relocated temporarily and erected on approved supports at locations shown in the plans, or as directed. This work will not be paid for directly but considered subsidiary to this Item.

Notify the Department officials when major traffic changes are to be made, such as detours. Coordinate with the Department on all traffic changes. Advance notification for the following week's work must be made by 5 P.M. on Wednesdays.

Provide access to intersecting side roads and driveways at all times, unless otherwise directed.

Any change to the sequence of work or TCP, with approval, assumes the responsibility for any additional barricade signs and devices.

Use striping operations to channelize traffic into the newly completed roadway, as directed. Maintain shoulders and median areas in a condition capable of serving as emergency paths, as approved. This work will be subsidiary to this Item.

Use portable changeable message signs (PCMS) to alert public of construction activities two weeks prior to construction.

Use flaggers when directed. Provide two-way radio communication for all flaggers.

Place and maintain sufficient additional warning signs, beacons, delineators, and barricades to warn and guide the public of all hazards through the construction zone at all times, and as directed.

Use flashing arrow boards on all tapers for each lane closure.

Some signs, barricades, and channelization devices may not be shown at the precise or measured position. Place the barricades, devices, or signs, with approval, in positions to meet field conditions.

Fill any holes left by barricade or sign supports and restore the area to its original condition.

Use Type A flashing warning lights or delineators to mark open excavation, footings, foundations, or other obstructions near lanes that may be open to traffic, as directed.

For additional information pertaining to channelization, signing, spacing details, and flagging procedures required to regulate, warn, and guide traffic through project, refer to the "Barricade

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and Construction Standards," BC(1)-14 and to the current *Texas Manual on Uniform Traffic Control Devices(TMUTCD).*

Remove or cover signs that do not apply to current conditions at the end of each day's work.

Repair and/or replace all signs damaged by the public or due to weather events.

Safety Contingency

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancement, to improve the effectiveness of the TCP that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid Items if it does not slow the implementation of enhancement.

Item 506 – Temporary Erosion, Sedimentation, and Environmental Controls

Place Best Method Practices (BMP's) in locations as designated in the plans or as directed to meet field conditions.

Place a weatherproof bulletin board containing the Texas Commission on Environmental Quality (TCEQ) required information on the project at a site as directed. Post the following documents:

(1) TCEQ "TPDES Storm Water Program" Primary & Secondary Construction Site Notice (Both must be filled out and signed);
(2) TCEQ "Notice of Intent"; and
(3) TCEQ "TPDES Permit."
Place rain gauge(s) at locations as designated.

Contractor will be responsible for obtaining and cost of CGP, NOI, TPDES and NOT.

The total disturbed area for this project is shown on the plans. The soil disturbed area in this project, all project locations in the Contract, and Contractor Project Specific Locations (PSLs), within one mile of the project limits, for the Contract will further establish the authorization requirements for Storm Water Discharges. The Department will obtain an authorization to discharge storm water from TCEQ for the construction activities shown on the plans. Obtain any required authorization from the TCEQ for any Contractor PSLs for construction support activities on or off right of way. When the total area disturbed for all projects in the Contract and PSLs within one mile of the project limits exceeds five acres, provide a copy of the Contractor Notice of Intent (NOI) PSLs on the right of way to the Owner.

Place Best Method Practices (BMP's) as shown on the plans, or as directed. Maintain and properly place the erosion control measures to prevent storm water pollution to the Waters of the United States, as directed. Within the project limits, keep all inlets functional as long as possible to accept storm water as part of the Storm Water Pollution Prevention Plan (SWP3), as directed.

The sedimentation fences will be paid at the time of their initial placement. Any required replacement will not be a substitute for proper maintenance and be allowed as directed. This work is subsidiary to this Item.

Grading operations will be limited to the catch point of the proposed cross-section.

Preserve any vegetation outside these limits.

Item 529 – Concrete Curb, Gutter and Combined Curb and Gutter

Use Type II cement and Class A concrete for these Items, unless otherwise shown on the plans. Wire mesh will not be allowed. Reinforce all concrete using reinforcement conforming to Item 440, “Reinforcement for concrete,” as shown on the plans or as directed.

Construct the curb opening with metal plate configuration detailed in the plans, or as directed, to ensure roadway drainage to the existing basin. All required manipulations or incidentals required to complete the work are subsidiary to these Items.

Perform all required grading for proposed concrete curb, gutter, and combined curb and gutter construction as shown on the plans.

After construction, restore the adjacent surface to a condition approved by the Engineer, subsidiary to this Item.

All concrete gutters shall have a minimum thickness of 6-inches.

Item 530 – Intersections, Driveways, and Turnouts

Saw-cut existing roadways and driveways to neat lines when proposed sidewalks intersect. Clean area prior to concrete placement. This work is subsidiary to this Item.

Use Class A concrete for all concrete driveways, unless otherwise shown on the plans.

High early strength concrete for proposed driveways to be available as deemed necessary and as directed.

Item 531 – Sidewalk

The wheelchair ramp dimensions and locations shown in the plans may be adjusted, as directed, to match the field conditions. Any such modification will not be paid directly but will be subsidiary to this Item.

Modify the sidewalk expansion joint spacing to 20 ft. spacing where waterlines may exist under the sidewalk subsidiary to this Item.

Provide textured finish for wheelchair ramps as directed.

Perform all work under this Item to conform to ADA and TDLR standards.

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Perform all requiring grading for proposed sidewalks construction as shown on the plans. All grading, including excavation, fill, and embankment is subsidiary to this Item.

Detectable warning surface for new ramps shall be made from an approved surface applied vitrified polymer composite tile, red in color.

Item 538 – Right-of-Way Markers

This Item shall be used for the installation of the new city monuments identified on the plans.

New city monuments shall be certified and sealed by a professional surveyor licensed in the state of Texas.

Any existing monuments not identified for replacement or removal disturbed by the Contractor shall be reconstructed at no cost to the Owner and shall be certified and sealed by a professional surveyor licensed in the state of Texas.

Item 540 – Metal Beam Guard Fence

Provide composite blockouts for all Metal Beam Guard Fence (MBGF) posts.

Install guardrails in the direction of traffic flow.

Stake the locations for approval prior to beginning the installation of the proposed MBGF.

Remove all delineators and object markers associated with the MBGF subsidiary to this Item

Verify MBGF post lengths and heights prior to ordering materials.

Place reflectors, as per Delineator and Pavement Marker Standard Sheet D&OM (1)-15 on the metal beam rail element or as directed subsidiary to this Item.

At the end of each work day, protect all untreated, incomplete, MBGF/Rail blunt ends exposed to traffic flow during construction until the permanent end treatment is in place. All work and incidentals are considered subsidiary to this Item.

MBGF not used will become the property of the Contractor.

Item 544 –Guardrail End Treatments

Provide composite blockouts for all MBGF posts.

Install guardrails in the direction of traffic flow.

Stake the locations for approval prior to beginning the installation of the proposed Metal Beam Guard Fence (MBGF).

Remove all delineators and object markers associated with the MBGF subsidiary to this Item.

Verify MBGF post lengths and heights prior to ordering materials.

Place reflectors, as per Delineator and Pavement Marker Standard Sheet D&OM (1)-15 on the metal beam rail element or as directed subsidiary to this Item.

At the end of each work day, protect all untreated, incomplete, MBGF/Rail blunt ends exposed to traffic flow during construction until the permanent end treatment is in place. All work and incidentals are subsidiary to this Item.

MBGF not used will become the property of the Contractor.

Item 585 – Ride Quality for Pavement Surfaces

Surface Test Type B Schedule 2 will be required for final riding surface.

Item 618 – Conduit

For conduit placement in pavement, Contractor shall bore underneath pavement. Contractor shall submit bore plan for approval by the Owner. Pavement cutting is not allowed on Right-of-Way.

Backfill roadway and driveway trench with cement-stabilized backfill at the end of each working day. Place an asphalt patch at the end of the week or as directed by the Engineer.

Utility permit is needed for all bores. Coordinate with City of El Paso.

The location of conduits and ground boxes are diagrammatic only and may be shifted to accommodate field conditions as directed.

Bore shall be directional, bore pits, and sidewalk replacement are subsidiary to Item 618.

Pot-holing at boring of conduit locations by the Contractor shall be performed at the Contractor's discretion or as directed by the Owner where there may be potential utility conflicts. This work is subsidiary to Item 618. Pot-holing shall follow city ordinance on repairs of roadway.

Fit both ends of each conduit with a temporary cap to prevent dirt and debris from entering during construction. at completion of the project, all conduit ends shall be bell end type.

Conduit bends/elbows shall be accomplished with a “PVC” coupling as directed and accepted by the supervisor/inspector. this Item is subsidiary to Item 618.

Utility line spotting request shall be done through and by calling Texas811.

Item 628 – Electrical Services

Meet at the service location with City of El Paso maintenance, and the electric utility company at least four (4) weeks before electric power is needed to finalize exact service pole placement and resolve any issues.

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Any electrical costs for connection, test, and operation will be the responsibility of the Contractor.

Make all arrangements for electrical service, and for compliance with local standards and practices for proper installation.

Item 644 – Small Roadside Sign Assemblies

Stake all sign locations and receive approval prior to sign placement.

The 2-1/2-inch, Schedule 10 post will meet the following requirements:

- 0.120 in. nominal wall thickness
- Seamless or electric-resistance welded steel tubing or pipe
- Steel will be HSLAS Grade 55 per ASTM A1011 or ASTM A1008

Other steel may be used, if it meets the following:

- 55,000 psi minimum yield strength
- 70,000 psi minimum tensile strength
- 20% minimum elongation in 2 in.
- Wall thickness (uncoated) to be within the range of 0.108 in. to 0.132 in. galvanization per ASTM A123 or ASTM A653 G90

For pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metalizing with zinc wire per ASTM B833.

Verify all post lengths to ensure the proper sign height. Remove and replace any sign installed incorrectly. This work will be done at no expense to the Owner.

Provide Texas Universal Triangular Slip Base clamp type for all signs as shown on SMD (Slip-1)-08.

As directed, some regulatory and guide signs will be relocated before construction begins. Mark and locate each reference marker perpendicular to the road and along the right of way, or as directed, prior to removal. Re-erect reference markers at their original location upon completion of construction.

Item 662 – Work Zone Pavement Markings

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as

directed. Place final striping on these locations. This work shall be considered subsidiary to this Item.

Remove and properly dispose of tabs upon completion of the final striping. This work is subsidiary to this Item.

Place tabs as per TXDOT Standard sheet. Place raised pavement markers in accordance with applicable standards and as directed.

Item 666 – Retroreflectorized Pavement Markings

Use a pilot line for final striping and remove pilot line after all striping is complete. Removal will be in accordance with the methods specified in Item 677, "Eliminating Existing Pavement Markings and Markers," and is subsidiary to this Item.

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as directed. Place final striping on these locations.

Contractor is responsible for conducting reflectivity testing and is subsidiary to this Item.

Item 672 – Raised Pavement Markers

Furnish adhesives that conform to DMS-6100, "Epoxies and Adhesives," and DMS-6130, "Bituminous Adhesive for Pavement Markers," for this Item.

Do not place raised pavement markers when the pavement surface temperature is below 60°F.

Removal of all existing raised pavement markers is subsidiary to this Item.

Item 677 – Eliminating Existing Pavement Markings and Markers

Remove existing raised pavement markings as the work progresses or as approved. This work is subsidiary to the various bid Items. Properly dispose materials removed.

Item 678 – Pavement Surface Preparation for Markings

Air blasting is required as pavement surface preparation and is subsidiary to this Item.

Item 1002 – Landscape Amenity

Boulders are to be installed where shown on plans. Multiple boulders shown in the same area should be partially buried and placed to simulate a natural appearance. The boulder size should vary and some boulders could be placed so that they touch.

Golden Brown is the color and name of the boulder type as approved by the engineer.

- Landscape Amenity Type I – 24"x24" Golden Brown Boulder

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- Landscape Amenity Type II – 36" x36" Golden Brown Boulder

See detail F on the Aesthetic and Planting Details sheets for installation information.

Item 1005 – Loose Aggregate for Ground Cover

Aggregate shall be placed in the areas indicated on the plans. The hatch style will determine the type of gravel to be placed. All aggregate shall be placed on the specified vegetation barrier. The top of the mulch shall be placed so that it is 2" below top of curb or top of asphalt if no curb exists. The weed barrier shall be pinned at 3'-0" on center with a 2'-0" overlap at edges and the gravel placed on it immediately to prevent damage to the vegetation barrier from wind or construction activities.

Padre Canyon Red is the gravel type and color.

- Loose Aggregate TY I is 1-1/2" Padre Canyon Red and should be placed at a 3" depth. Finished grade should be 5" below top of adjacent concrete or asphalt surfaces to allow for gravel depth and 2" clearance.

Sierra Brown is a gravel type and color.

- Loose Aggregate TY II is 2"-4" Sierra Brown and should be placed at a 6" depth. Finished grade should be 8" below top of adjacent concrete or asphalt surfaces to allow for gravel depth and 2" clearance.

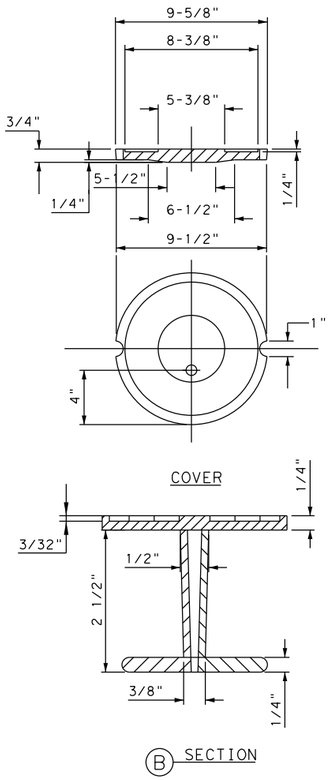
Loose Aggregate TY III is compacted crushed stone screening and should be placed at a 3" depth. Material shall have a minimum PI of 8, with no loose material, and shall be compacted to 90% per ASTM D-1557.

Secure rock types that are clean and free of debris or foreign materials prior to placement and as approved by the engineer. Rock colors will not be changed without approval by Owner or its designated representative.

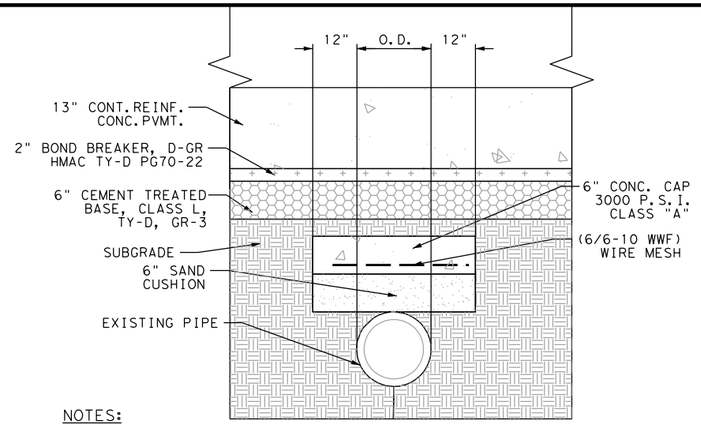
Item 6001 – Portable Changeable Message Sign

Provide messages as directed.

Portable Changeable Message Sign to be available as deemed necessary.



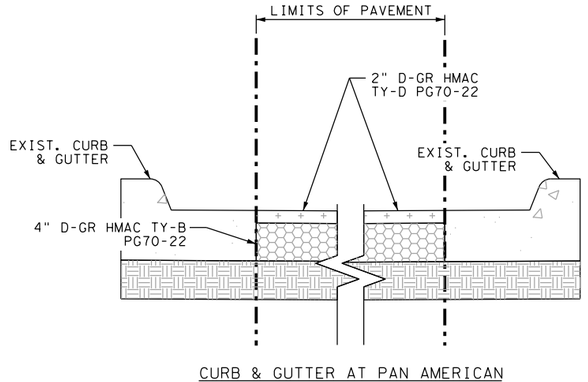
Ⓑ SECTION



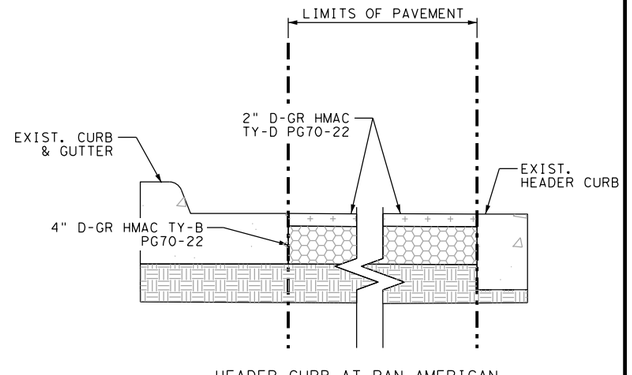
NOTES:

1. DETAIL USED WHEN STANDARD COVER CANNOT BE MET. PAID FOR UNDER ITEM 401.
2. NEW PAVEMENT ELEVATION, HMAC THICKNESS, BASE THICKNESS, AND SUB-BASE THICKNESS REFERENCE TYPICAL SECTION.

CONCRETE CAP (PAVED CONDITION)

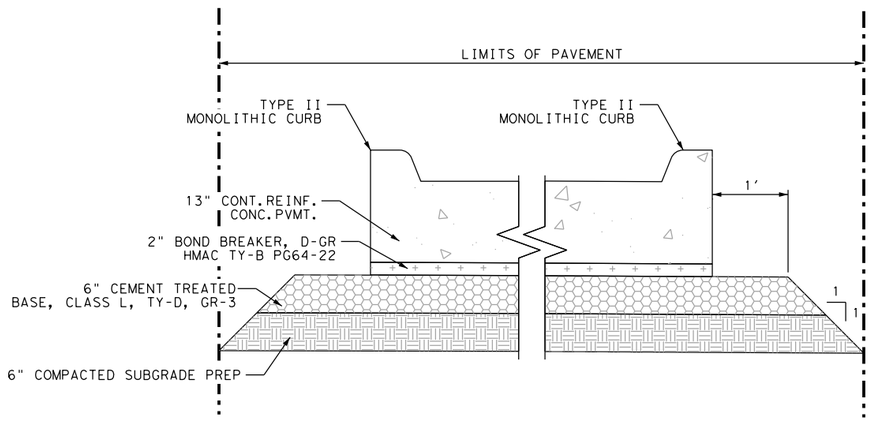


CURB & GUTTER AT PAN AMERICAN

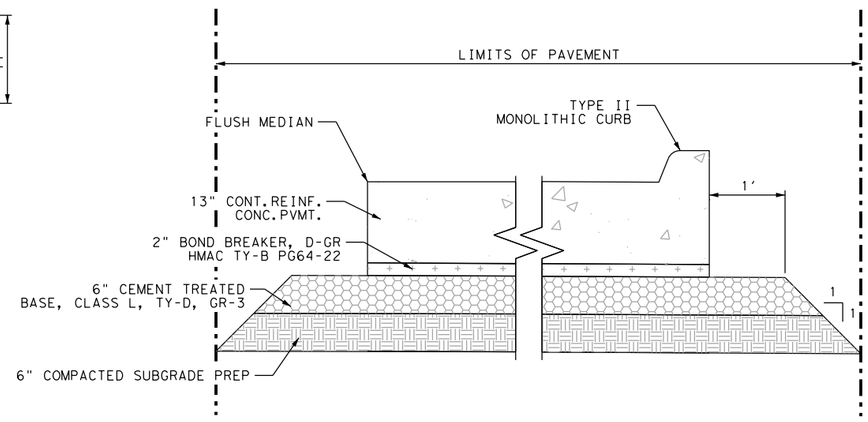


HEADER CURB AT PAN AMERICAN

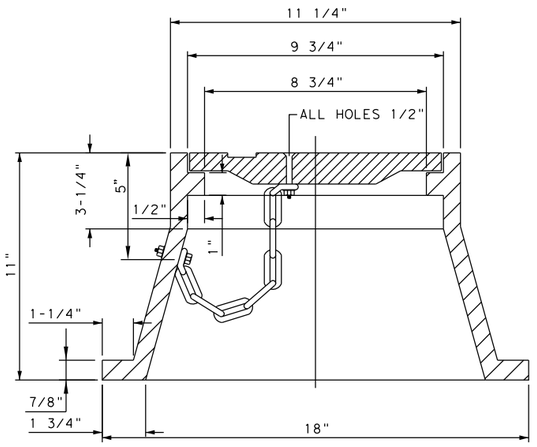
PAVEMENT STRUCTURE



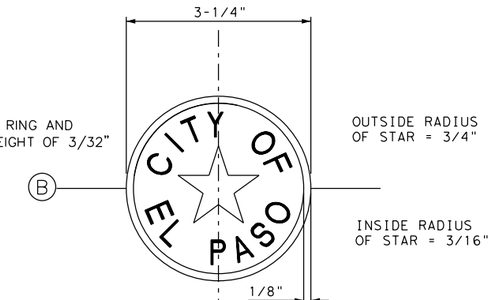
RAISED MEDIANS AT WINN ROAD



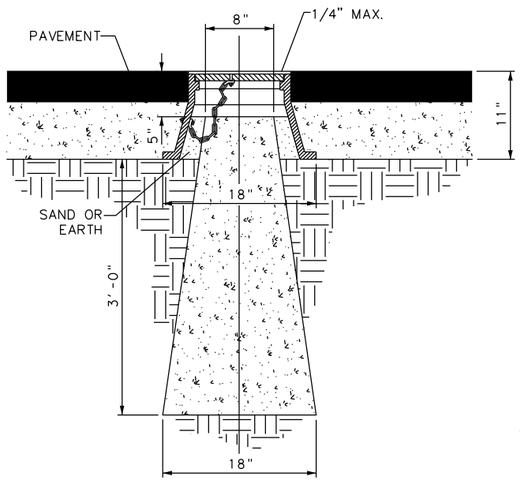
FLUSH MEDIANS AT WINN ROAD



FRAME SECTION



BRONZE MONUMENT CAP



NO FORMS REQUIRED.
CONCRETE TO BE POURED IN PLACE
3000 P.S.I. CONC.

NEW CITY MONUMENT DETAILS

PAVEMENT STRUCTURE

STATE OF TEXAS
RUBEN CHAVEZ
87318
LICENSED PROFESSIONAL ENGINEER
9/10/18

cea group
TEXAS REGISTERED ENGINEERING FIRM F-4564
4712 Woodrow Bean, Ste. F El Paso, TX 79924
915.544.5232 | www.ceagroup.net

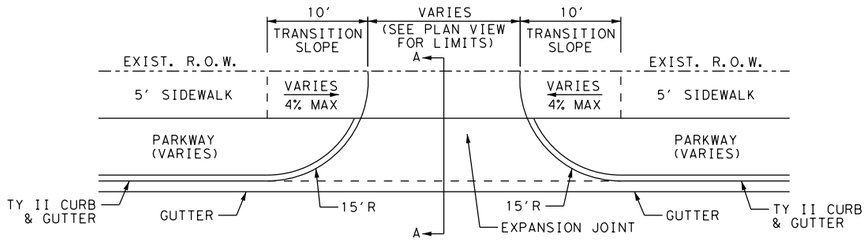
CAMINO REAL REGIONAL MOBILITY AUTHORITY

ZARAGOZA POE, PAN AMERICAN DR. & WINN RD. BUILD/IMPROVEMENTS

MISCELLANEOUS DETAILS

SHEET 1 OF 2

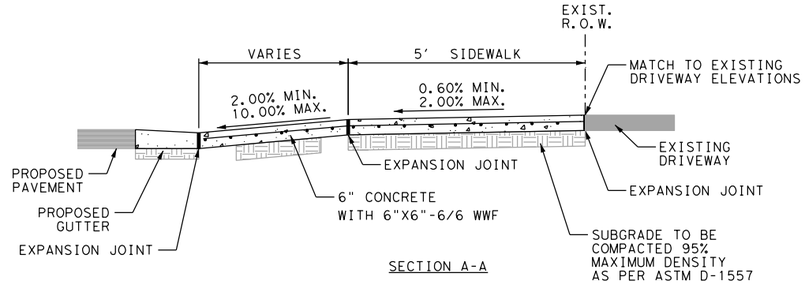
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			134-A1
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	418	CS



PLAN

DRIVEWAY NOTES:

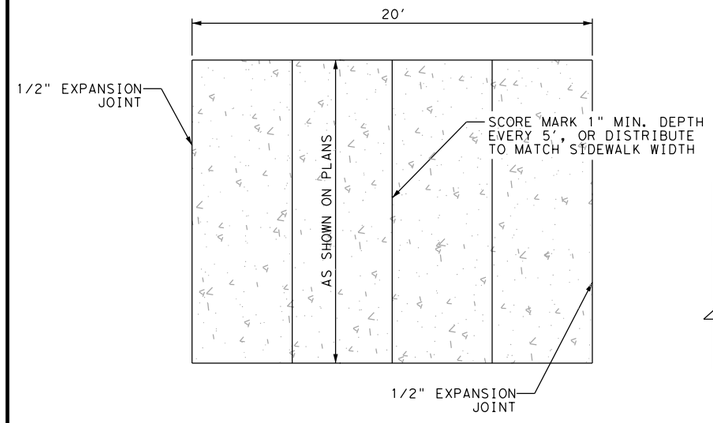
1. CONCRETE FOR DRIVEWAYS SHALL BE 3,000 PSI MIN. AT 28 DAYS.
2. USE 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT MATERIAL.
3. A MAXIMUM OF 2.0% SLOPE SHALL BE MAINTAINED ON SIDEWALK PATH. CONTRACTOR WILL BE RESPONSIBLE FOR REPLACING NON-COMPLIANT PATH AT THEIR OWN EXPENSE.
4. DRIVEWAY SLOPES MUST BE 10% MAX SLOPE FROM GUTTER.
5. DRIVEWAY SLOPE MAY VARY WITHIN EACH INDIVIDUAL DRIVEWAY.
6. DRIVEWAY TO MATCH EXISTING ELEVATIONS AT R.O.W. BOUNDARY.



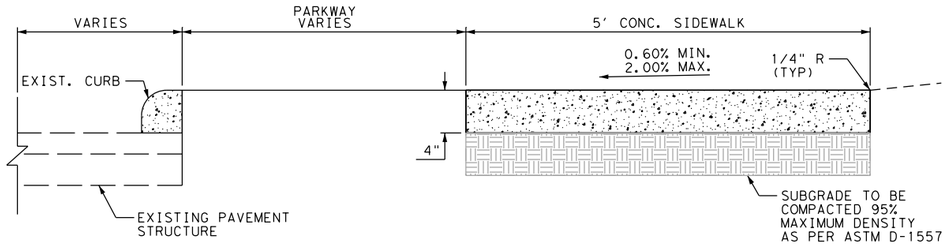
SECTION A-A

COMMERCIAL DRIVEWAY DETAIL

N.T.S.



PLAN



SIDEWALK WITH PARKWAY DETAIL

N.T.S.

SIDEWALK NOTES:

1. CONCRETE FOR DRIVEWAYS SHALL BE 3,000 PSI MIN. AT 28 DAYS.
2. USE 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT MATERIAL.
3. EXPANSION JOINT FILLER SHALL BE PLACED WHEREVER SIDEWALK ABUTS ROCK OR MASONRY STRUCTURES SUCH AS CURBS OR BUILDINGS.
4. SIDEWALK TO MATCH EXISTING ELEVATIONS AT R.O.W. BOUNDARY.

STATE OF TEXAS
RUBEN CHAVEZ
87318
LICENSED PROFESSIONAL ENGINEER
9/10/18

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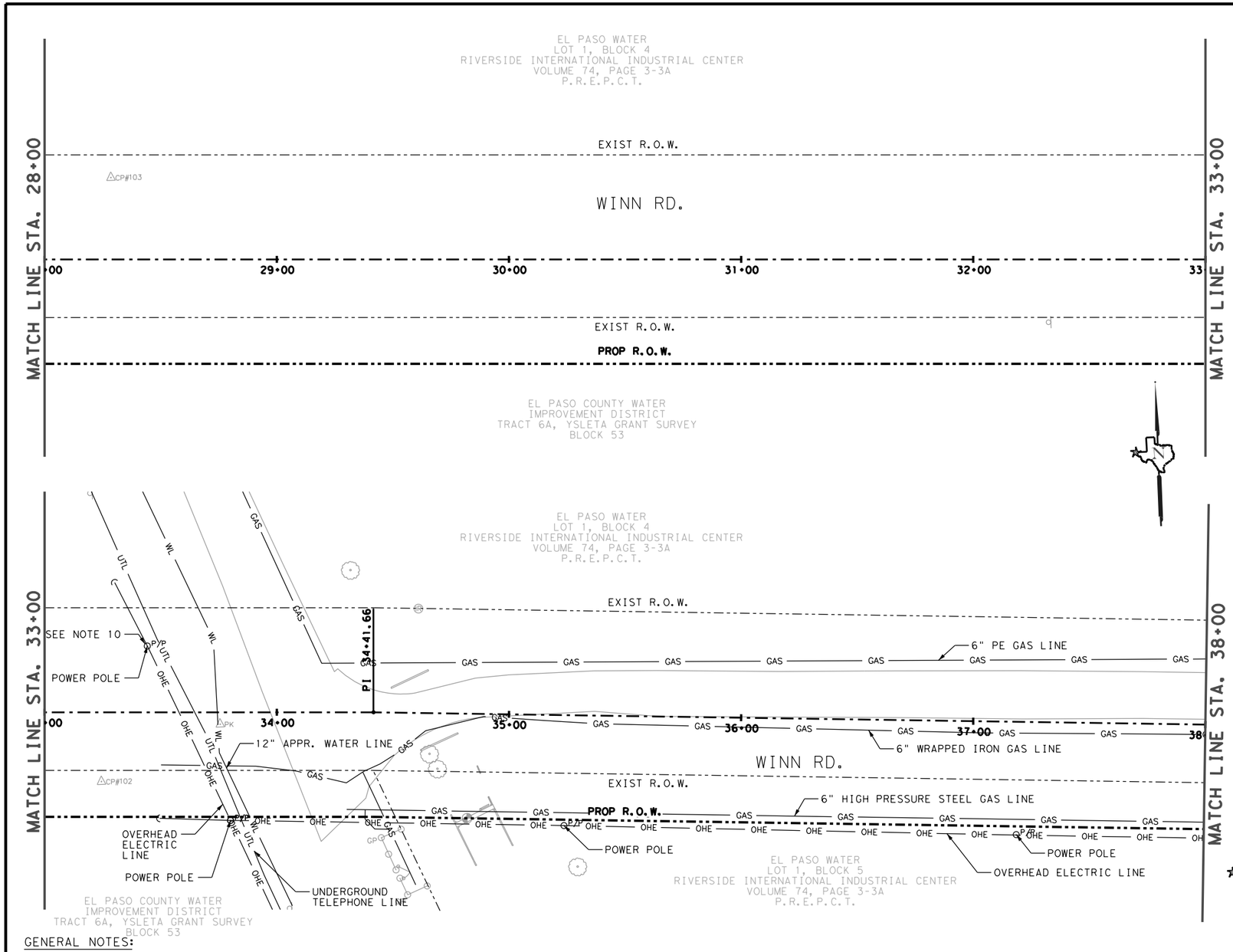
CAMINO REAL REGIONAL MOBILITY AUTHORITY

ZARAGOZA POE, PAN AMERICAN DR. & WINN RD. BUILD/IMPROVEMENTS

MISCELLANEOUS DETAILS

SHEET 2 OF 2

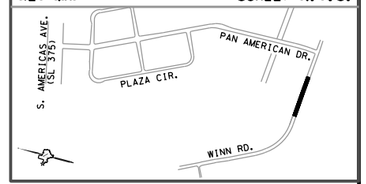
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			134A-A1
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	418	CS



LEGEND:

FH	FIRE HYDRANT
WM	WATER METER
WV	WATER VALVE
RWV	RECLAIMED WATER VALVE
GM	GAS METER
GV	GAS VALVE
MH	MANHOLE
MHW	WASTE WATER MANHOLE
MHS	STORM SEWER MANHOLE
MHT	TELEPHONE MANHOLE
CO	WASTE WATER CLEAN OUT
JB	JUNCTION BOX
ICV	IRRIGATION CONTROL VALVE
JBT	TELEPHONE JUNCTION BOX
TP	TELEPHONE PEDESTAL
	TRANSFORMER
	TRAFFIC SIGNAL LIGHT POLE
JBE	ELECTRICAL JUNCTION BOX
	PEDESTRIAN TRAFFIC SIGNAL LIGHT POLE
P/P	POWER POLE
L/P	LIGHT POLE
UM	UTILITY MARKER
	IRRIGATION LINE
GAS	GAS LINE
FOC	FIBER OPTIC LINE
WL	WATER LINE
SAN	SANITARY SEWER LINE
UE	UNDERGROUND ELECTRICAL LINE
OHE	OVERHEAD ELECTRICAL LINE
STR	STORM SEWER LINE
UTL	UNDERGROUND TELEPHONE LINE

KEY MAP SCALE: N.T.S.



WARNING!
BEFORE YOU DIG
CALL 811
FOR FIELD LOCATING EXISTING UTILITIES

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING LOCATIONS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITIES, FOR ADJUSTMENT OF ALL UTILITY MANHOLES, FIRE HYDRANTS, METER BOXES AND VALVE COVERS TO NEW FINISHED GROUND PAVEMENT ELEVATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAVEMENT WORK, AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL COORDINATE WITH THE AFFECTED UTILITY COMPANY, PRIOR TO CONSTRUCTION, TO ENSURE COMPLIANCE WITH THE UTILITY STANDARDS.
3. THE CONTRACTOR SHALL INFORM THE ENGINEER AND THE RESPECTIVE UTILITY COMPANIES WHEN IT BECOMES APPARENT THAT UTILITY LINES WILL INTERFERE WITH WORK PROGRESS, AND SHALL ALLOW THE RESPECTIVE UTILITY COMPANY TO ENTER THE SITE AND ADJUST AND/OR RELOCATE ITS UTILITY LINE(S).
4. LOCATION OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATION AND DEPTH MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
5. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERE TO. THE CONTRACTOR SHALL VERIFY LOCATION (HORIZONTAL AND VERTICAL) OF UNDERGROUND PIPELINE, CONDUITS, AND STRUCTURES BY CONTACTING OWNERS OF UNDERGROUND UTILITIES AND BY PROSPECTING IN ADVANCE OF EXCAVATING OPERATIONS. INFORMATION SHOWN ON THE PLANS ARE REFERENCED FROM DATA OBTAINED FROM THE PERTAINING UTILITY AND/OR UTILITY MARKINGS.
6. ACTIVE SERVICE LINE UTILITIES INCLUDING WATER AND SANITARY SEWER, WHETHER OR NOT SHOWN ON THE DRAWINGS, SHALL BE ADEQUATELY PROTECTED FROM DAMAGE. ANY DAMAGED UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. SERVICE MUST BE PROVIDED AT ALL TIMES. INCLUDE TRAFFIC SIGNAL INFRASTRUCTURE UNDERGROUND LINE BY CONTACTING SAM DEPARTMENT TRAFFIC SIGNAL SHOP 212-0151 (TYP. ALL)
7. INACTIVE OR ABANDONED UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED, CAPPED OR PLUGGED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. IN THE ABSENCE OF SPECIFIC REQUIREMENTS, ALL WORK UNDER THIS HEADING SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES OR REGULATIONS OR AS DIRECTED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE.
8. EXISTING GAS MAINS CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING GAS MAINS, INCLUDING SERVICE LINES, FROM DAMAGE AS A RESULT OF THE CONSTRUCTION ACTIVITIES. IN THE EVENT THAT EXISTING GAS MAINS ARE IN CONFLICT WITH CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH TEXAS GAS SERVICE COMPANY.
9. WATER AND SANITARY SEWER SERVICE LINES AND METERS TO BE FIELD LOCATED AND ADJUSTED TO MATCH PROPOSED GRADE. COORDINATE WITH UTILITY FOR RECONNECTION AND RELOCATION.
10. CONTRACTOR SHALL COORDINATE WITH EL PASO ELECTRIC CO. (EPEC) ON RELOCATION OF EXISTING POWER POLES WITHIN THE PROPOSED RIGHT-OF-WAY.
11. CONTRACTOR SHALL COORDINATE WITH TIME WARNER CABLE (TWC) ON RELOCATION OF EXISTING POWER POLE WITHIN THE PROPOSED RIGHT-OF-WAY.

0 25' 50'
SCALE: H: 1" = 50'

STATE OF TEXAS
RUBEN CHAVEZ
87318
LICENSED
PROFESSIONAL ENGINEER
9/10/18

cea group
TEXAS REGISTERED ENGINEERING FIRM F-4564
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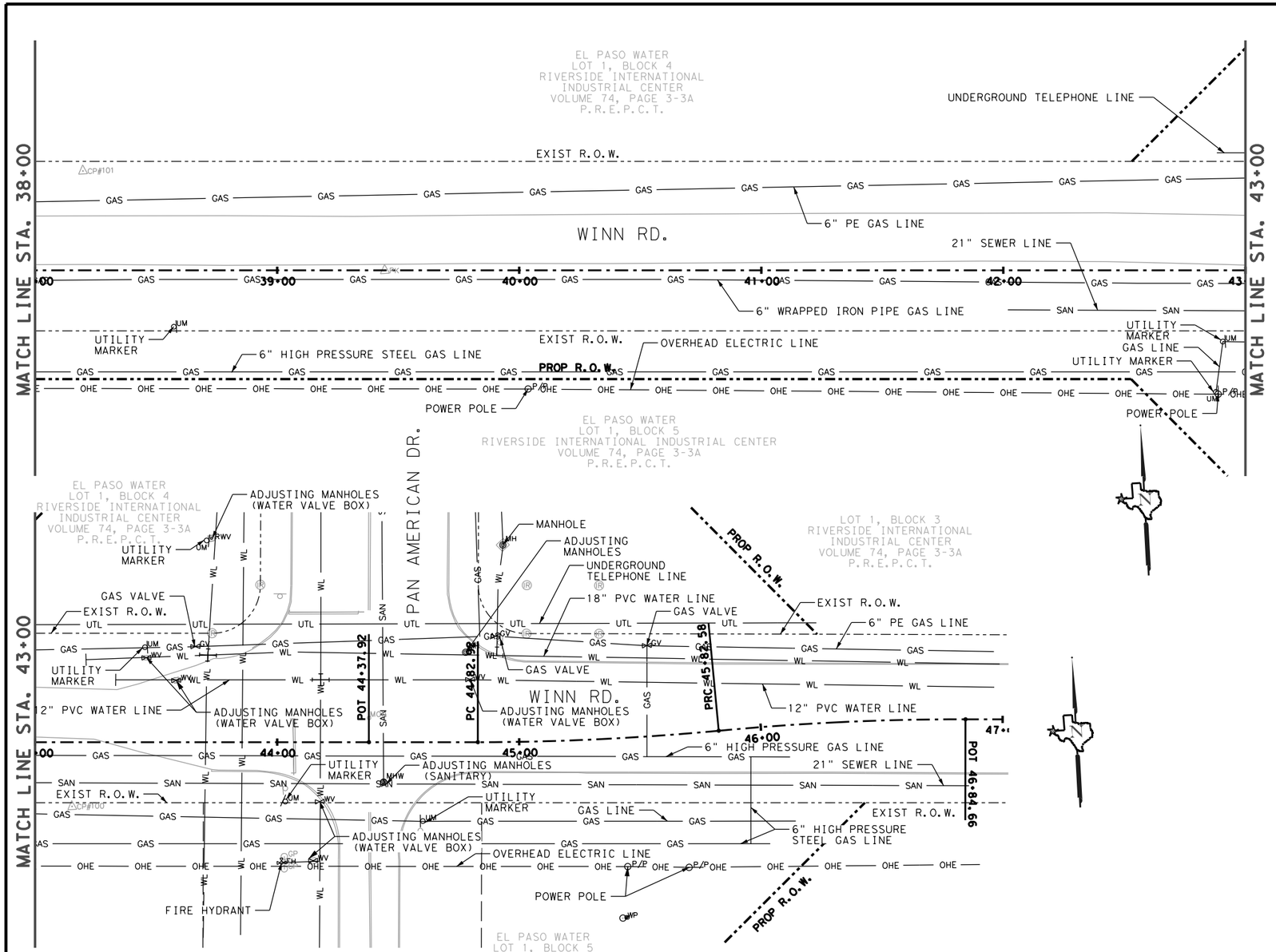
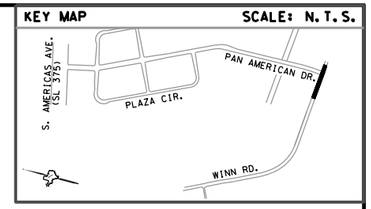
EXISTING UTILTY LAYOUT
STA. 28+00-STA. 38+00

SHEET 4 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			238-A1
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	418	CS





LEGEND:

FH	FIRE HYDRANT
WM	WATER METER
WV	WATER VALVE
RWV	RECLAIMED WATER VALVE
GM	GAS METER
GV	GAS VALVE
MH	MANHOLE
MHW	WASTE WATER MANHOLE
MHS	STORM SEWER MANHOLE
MHT	TELEPHONE MANHOLE
CO	WASTE WATER CLEAN OUT
JB	JUNCTION BOX
ICV	IRRIGATION CONTROL VALVE
JBT	TELEPHONE JUNCTION BOX
TP	TELEPHONE PEDESTAL
	TRANSFORMER
	TRAFFIC SIGNAL LIGHT POLE
JBE	ELECTRICAL JUNCTION BOX
	PEDESTRIAN TRAFFIC SIGNAL LIGHT POLE
P/P	POWER POLE
L/P	LIGHT POLE
UM	UTILITY MARKER
IRR	IRRIGATION LINE
GAS	GAS LINE
FOC	FIBER OPTIC LINE
WL	WATER LINE
SAN	SANITARY SEWER LINE
UE	UNDERGROUND ELECTRICAL LINE
OHE	OVERHEAD ELECTRICAL LINE
STR	STORM SEWER LINE
UTL	UNDERGROUND TELEPHONE LINE

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SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QTY
479	6001	ADJUSTING MANHOLES	EA	1
479	6004	ADJUSTING MANHOLES (SANITARY)	EA	1
479	6005	ADJUSTING MANHOLES (WATER VALVE BOX)	EA	6

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