FED RD.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		1
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

CAMINO REAL REGIONAL MOBILITY AUTHORITY

INDEX OF SHEETS: SEE SHEET NO. 2

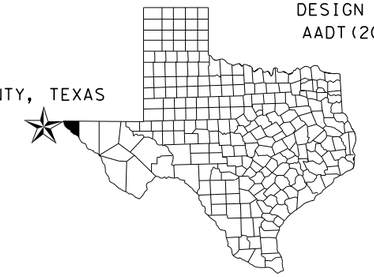
PLANS OF PROPOSED ROADWAY IMPROVEMENTS

CSJ: 0924-06-560
STP 2019(961)TAPS

TORNILLO SHARED USE PATH
EL PASO COUNTY, TEXAS

DESIGN SPEED = N/A
AADT(2017) = 2,526

EL PASO COUNTY, TEXAS

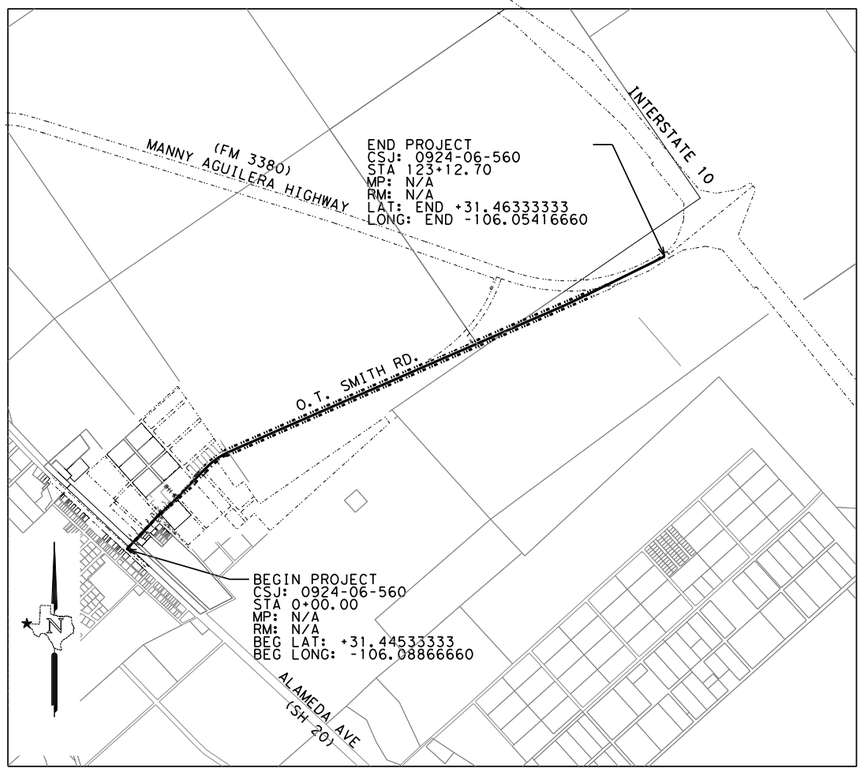


TEXAS COUNTY MAP

100% SUBMITTAL
SUBMITTED 05-30-19

LIMITS:
FROM: ON O.T. SMITH RD./SH 20 (ALAMEDA AVENUE)
TO: IH 10
ROADWAY LENGTH: APPROXIMATELY 2.450 MILES

FOR THE CONSTRUCTION OF A 8 FT. - 12 FT. TYPICAL WIDE SHARED USE PATH CONSISTING OF ASPHALT PAVEMENT, A CONCRETE HEADER CURB, ILLUMINATION, LANDSCAPE, SIGNING AND STRIPING.



SCALE: 1"= 3000'
R.R. CROSSINGS: YES
DESIGN EXCEPTIONS: NONE
EQUATIONS: N/A

LETTING DATE: _____
CONTRACTOR: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK WAS COMPLETED: _____
DATE WORK WAS ACCEPTED: _____
ORIGINAL CONTRACT AMOUNT: _____
TOTAL DAYS CHARGED: _____
FINAL CONTRACT COST: _____

REGISTERED ACCESSIBILITY SPECIALIST(RAS)
INSPECTION REQUIRED
TDLR NO. TABS2019009130

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

THE COUNTY OF EL PASO TEXAS

RECOMMENDED FOR LETTING: _____

CAMINO REAL REGIONAL MOBILITY AUTHORITY

RECOMMENDED FOR LETTING: _____

RAYMOND L. TELLES
EXECUTIVE DIRECTOR, CRRMA

COUNTY EL PASO PROJ. NO. _____
HWY. NO. CS LETTING DATE _____
DATE ACCEPTED _____

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014, AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 1, 2012)

INDEX OF SHEETS

SHEET	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3, 3A-3L	GENERAL NOTES (13)
4-7	PROJECT LAYOUT/HORIZONTAL CONTROL (4)
8-10	EXISTING TYPICAL SECTIONS (3)
11-17	PROPOSED TYPICAL SECTIONS (7)
18-20	QUANTITY SUMMARY SHEET (3)
	TRAFFIC CONTROL PLAN
21	TRAFFIC CONTROL LINE DIAGRAM
22-23	TRAFFIC CONTROL CONSTRUCTION SEQUENCE (2)
24-35	TRAFFIC CONTROL - PHASE 1 (12)
36-37	TRAFFIC CONTROL - PHASE 2 (2)
38-40	TRAFFIC CONTROL - PHASE 3 (3)
41	TRAFFIC CONTROL - PHASE 4
	TCP STANDARDS
42-53	BC (1)-14 THRU BC(12)-14 (12)
54	TCP (1-1)-18
55	TCP (1-2)-18
56	TCP (1-3)-18
57	TCP (2-1)-18
58	TCP (2-2)-18
59	TCP (2-3)-18
60	WZ (STPM)-13
61	WZ (BRK)-13
	ROADWAY
62-75	DEMOLITION AND GRADING PLAN (14)
76-89	SHARED USE PATH PLAN (14)
90-92	TYPICAL DETAILS (3)
93-94	TYPICAL SECTIONS (2)
95	PROPOSED CMP EXTENSION PLAN AND PROFILE
96-101	SMALL SIGN SUMMARY SHEETS (6)
101A	RAILROAD SOPE OF WORK
101B-101C	RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS (2)
	ROADWAY STANDARDS
102	GF (31)-14
103	SGT (12S) 31-18
104-105	PED-18 (2)
106-108	PRD-13 (3)
109	RCD (1)-16
110	RCD (2)-16
111-112	SRR (2)
113	CH-PW-0
114	CH-PW-S

SHEET	DESCRIPTION
	SIGNING STANDARDS
115	SMD(GEN)-08
116	SMD(SLIP-1)-08
117	SMD(SLIP-2)-08
118	SMD(SLIP-3)-08
	PAVEMENT MARKINGS & DELINEATION STANDARDS
119	PM (1)-12
120	PM (2)-12
121	PM (3)-12
122	D&OM(1)-15
123	D&OM(2)-15
124	D&OM(3)-15
125	D&OM(4)-15
126	D&OM(5)-15
	UTILITIES
127-140	EXISTING UTILITY LAYOUT PLAN (14)
	ILLUMINATION
141	ILLUMINATION PLAN NOTES
142-146	ILLUMINATION PLAN LAYOUTS (5)
147	PEDESTRIAN ASSEMBLY DETAILS
	LANDSCAPING
148-162	AESTHETIC PLAN (15)
163-164	IRRIGATION PLAN (2)
	ENVIRONMENTAL
165-179	STORMWATER POLLUTION PREVENTION PLAN (SW3P) (15)
180	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)
	ENVIRONMENTAL STANDARDS
181	EC (1)-16
182	EC (3)-16
183-184	EC (9)-16 (2)

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED IN THESE PLANS HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER

ROBERTO MORENO, P.E. 60910 — DATE 6/6/19

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

INDEX OF SHEETS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		2
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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General Notes:

Tests to be in accordance with Texas Department of Transportation 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, 95% minimum compaction.**
3. **From 24 in. below finished subgrade to finished subgrade, 95% 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-D PG70-22 D-GR HMA TY-C 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 the construction of an 8 ft. – 12 ft. wide shared use path of asphalt pavement, concrete curb, concrete driveways, illumination, striping, and landscaping work.

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 County of El Paso, 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.

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The Contractor shall inform the County of El Paso 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 County of El Paso.

Vibratory rollers will not be permitted for use on work within the project limits.

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

Item 3L – Award and Execution of Contract

The Contractor warrants to the County of El Paso that materials and equipment furnished under the contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the work will be free from defects not inherent in the quality required or permitted, and that the work will conform to the requirements of the Contract Documents. Completed work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

Neither the final Certificate of Payment, nor any provision in the Contract Documents, nor partial or entire use of the facility by the County of El Paso shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in their work and repair any damage to their work within a period of one (1) year from the date of final acceptance, unless a longer period is specified. The County of El Paso will give notice of observed defects with reasonable promptness.

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 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 County of El Paso 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 County of El Paso 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 County of El Paso and/or 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 County of El Paso or its designated representative could have been prevented, shall be repaired or replaced by the Contractor at his expense as directed by the County of El Paso 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 County of El Paso 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 “Standard Workweek.”

A CPM (Critical Path Method) schedule is required for this project conforming to “Critical Path Method”. Provide updates as directed by the County of El Paso.

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

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Begin work 90 calendar days after the authorization date to begin work. Do no begin work before or after this period unless authorized in writing by the Engineer.

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

Maintain thru traffic at all times on within the project limits.

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.

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	#1	Work from Drake Street intersection (Sta. 21+50) to Project End (Sta. 104+80) • Installation of shared use path and associated amenities along eastern roadway edge and/or abutting ROW	BC(1)-14; BC(2)-14; BC(3)-14; BC(4)-14; BC(5)-14; BC(6)-14; BC(8)-14; BC(9)-14; BC(10)-14; BC(11)-14; BC(12)-14; TCP(1-1)-18; TCP(1-3)-18; TCP(2-1)-18; TCP(2-3)-18; WZ(STPM)-13; WZ(BRK)-13	105 Days

Sequence	Phase	Description of Work	Construction Sequence	Contract Time
2	#2	Work from Railroad Drive (Sta. 2+00) to Drake Street intersection (Sta. 21+50) • Widening of existing pavement width along the western roadway edge by placement of new asphalt pavement (width varies)	BC(1)-14; BC(2)-14; BC(3)-14; BC(4)-14; BC(5)-14; BC(6)-14; BC(8)-14; BC(9)-14; BC(10)-14; BC(11)-14; BC(12)-14; TCP(1-1)-18; TCP(1-3)-18; TCP(2-1)-18; TCP(2-3)-18; WZ(STPM)-13; WZ(BRK)-13	47 Days
3	#3	Work from Railroad Drive (Sta. 2+00) to Drake Street intersection (Sta. 21+50) • Installation of shared use path and associated amenities along eastern roadway edge and/or abutting ROW	BC(1)-14; BC(2)-14; BC(3)-14; BC(4)-14; BC(5)-14; BC(6)-14; BC(8)-14; BC(9)-14; BC(10)-14; BC(11)-14; BC(12)-14; TCP(1-1)-18; TCP(1-3)-18; TCP(2-1)-18; TCP(2-3)-18; WZ(STPM)-13; WZ(BRK)-13	72 Days
4	#4	Work from Alameda Avenue (SH 20) (Sta. 0+00) to Railroad Drive (Sta. 2+00) • Installation of shared use path and associated amenities within railroad ROW • Widening of existing pavement width along the eastern roadway edge by placement of new asphalt pavement (width varies)	BC(1)-14; BC(2)-14; BC(3)-14; BC(4)-14; BC(5)-14; BC(6)-14; BC(7)-14; BC(8)-14; BC(9)-14; BC(10)-14; BC(11)-14; BC(12)-14; TCP(1-1)-18; TCP(1-3)-18; TCP(2-1)-18; TCP(2-3)-18; WZ(STPM)-13; WZ(RCD)-13; WZ(BRK)-13	37 Days

TOTAL 261 Days

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.

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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% minimum compaction in accordance with Section 132.3.4.2., "Density Control."

Item 110 – Excavation (Special):

Pothole and identify possible utility conflicts along proposed conduit installation and proposed drill shaft foundations.

Pothole as directed to the proposed ground boxes, foundations, and conduit locations. This work shall be accomplished prior to commencement of the installation/construction of the above mentioned facilities.

The intent is to determine if any conflicts with other buried utilities or structures exist. When a conflict exists, the engineer shall be notified to determine if additional exposure of the conflict is required.

Fill the potholes up to the bottom of the pavement surface after excavating with material from the hole and compact to 95% density. The holes shall then be patched with a suitable hot mix asphalt concrete material or earthen material as directed by the Engineer. The Contractor shall then maintain these patches in good repair until the completion of work. Equipment, labor, and materials associated with this work shall be considered subsidiary to the various bid items.

Inform the Engineer and the respective utility companies when it becomes apparent that utility lines shall interfere with work in progress.

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.

Contractor shall remove and replace existing fence, barbed wire, or other appurtenances along the project to allow for proposed grading of the project site. The contractor is responsible to coordinate efforts with both the adjacent property owner(s), and the County of El Paso field representative before beginning any removals. All work and materials needed for removal and replacement of existing fence, barbed wire, and appurtenances shall be subsidiary to this item.

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

Item 161 – Compost

The Contractor shall furnish, and place compost as shown on the plans or as directed.

Item 162 – Sodding for Erosion Control

The Contractor shall provide and install grass sod as shown on the plans or as directed.

Item 164 – Seeding for Erosion Control

The Contractor shall provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed.

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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.

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 County of El Paso 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 County of El Paso 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 The County of El Paso Public Works and the El Paso County Tornillo Water Improvements District (EPCTWID) 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 County of El Paso 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 County of El Paso 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 County of El Paso 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.

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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 County of El Paso Public Works 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 County 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 County of El Paso 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 County of El Paso.

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.

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 County of El Paso. 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 County of El Paso 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 “close-up” photo of the caliper being measured at the base. The County of El Paso or Landscape Architect still has the right of refusal at the site inspection.

The County of El Paso 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 County of El Paso.

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.

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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 County of El Paso 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 County of El Paso or its designated representative if impervious soils are encountered. The County of El Paso 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 County of El Paso.

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 location of traffic signage takes precedence over tree placement. With permission from The County of El Paso 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 the County of El Paso Public Works for inspections of the following:

A. Tree review prior to installation

B. Plant placement

C. Final walkthroughs.

Item 193 – Landscape Establishment

The Contractor shall establish landscape plantings and maintain landscaped areas at designated locations.

Item 247 – Flexible Base

Preparation and compaction of the subgrade is considered subsidiary to this Item.

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

Item 251 – Reworking Base Courses

Refinish or rework existing base material with or without asphaltic concrete pavement. Incorporate new base material when shown on the plans.

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Item 310 – Prime Coat

Prepare and treat existing or newly constructed surface with a bituminous material as shown or as directed by The County of El Paso 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 340 – Dense Graded Hot Mix Asphalt (Small Quantity)

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

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.

Schedule lay-down placement where uneven travel lanes are minimized and eliminated weekly.

Item 416 – Drilled Shaft Foundations

Stake all foundations and locations approved by the Engineer 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 Engineer and the utility owner at no additional cost to the Department.

Use Class "C" concrete.

Cover drilled shafts with plywood and delineate them with cones, to the satisfaction of the Engineer, when not working in them and after work hours.

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

Item 432 – Riprap

Provide Type II cement and Class B concrete.

Reinforce all concrete riprap using bar reinforcement conforming to Item 440, "Reinforcement for Concrete," as shown on the plans, or as directed. For roadway illumination assemblies, riprap may include wire mesh per standard RID (2)-17.

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 450 – Railing

The Contractor will abide by TxDOT's November 2014 edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Item 450.

Item 460 – Corrugated Metal Pipe

The Contractor will abide by TxDOT's November 2014 edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Item 460.

Item 466 – Headwalls and Wingwalls

The Contractor will abide by TxDOT's November 2014 edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Item 466.

Item 496 – Removing Structures

The Contractor will abide by TxDOT's November 2014 edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Item 496.

Item 500 – Mobilization

The Contractor will abide by TxDOT's November 2014 edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Item 500.

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.

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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 enough 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.

Repair or replace signs to be subsidiary to this item.

TCP SELECTION TABLE

LOCATION	TYPE OF WORK	STD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
O.T. SMITH ROAD	INSTALLATION OF SHARED USE PATH AND ASSOCIATED AMENITIES ALONG EASTERN ROADWAY EDGE AND/OR ABUTTING ROW. WIDENING OF EXISTING PAVEMENT WIDTH ALONG THE ROADWAY EDGE BY PLACEMENT OF NEW ASPHALT PAVEMENT (WIDTH VARIES)	BC (1)-14	GENERAL NOTES AND REQUIREMENTS	NA	GENERAL REQUIREMENTS AND INSTRUCTIONS OF USE OF TCP STANDARD SHEETS; PHASE 1-4
		BC (2)-14	PROJECT LIMIT	NA	PLACE SIGNS WITH APPROPRIATE SIZES AND DISTANCES INDICATING PROJECT LIMITS; PHASE 1-4
		BC (3)-14	WORK ZONE SPEED LIMIT	NA	ESTABLISH WORK ZONE SPEED LIMIT AND DETERMINE FREQUENCY AND DISTANCE BETWEEN SIGNS; PHASE 1-4
		BC (4)-14	TEMPORARY SIGN NOTES	NA	REVIEW FOR SIGN PLACEMENT; PHASE 1-4
		BC (5)-14	TYPICAL SIGN SUPPORT	NA	REVIEW FOR SIGN PLACEMENT; PHASE 1-4
		BC (6)-14	PORTABLE CHANGEABLE MESSAGE SIGN	NA	SIGN TO BE USED TO SHOW CURRENT INFORMATION ABOUT WORK ZONE CONSTRUCTION OR LANE CLOSURES; PHASE 1-4
		BC (7)-14	ARROW PANEL, REFLECTORS, WARNING LIGHTS, & ATTENUATOR	NA	FOR ALL LANE CLOSURES REQUIRING THE USE OF FLASHING ARROW BOARDS; PHASE 1-4
		BC (8)-14	CHANNELIZING DEVICES	NA	CHANNELIZED DEVICES TO BE USED FOR STATIONARY WORK ZONES DURING PATH AND PAVEMENT WIDENING CONSTRUCTION; PHASE 1-4
		BC (9)-14	CHANNELIZING DEVICES	NA	OPPOSING TRAFFIC LANE DIVIDERS TO BE USED ALONG WORK ZONE DURING PATH AND PAVEMENT WIDENING CONSTRUCTION AND AT INTERSECTION OF OT SMITH AND ALAMEDA INDICATING TWO-WAY TRAFFIC; PHASE 1-4
		BC (10)-14	CHANNELIZING DEVICES	NA	CONES MAY BE USED AS CHANNELIZED DEVICES ALONG WORK ZONE DURING PATH AND PAVEMENT WIDENING CONSTRUCTION; PHASE 1-4
		BC (11)-14	PAVEMENT MARKINGS	NA	REMOVAL AND PLACEMENT OF PAVEMENT MARKINGS ALONG ROADWAY ON NEW ASPHALT PAVEMENT; PHASE 1-4

(cont'd)	(cont'd)	BC (12)-14	PAVEMENT MARKING PATTERNS	NA	RECOMMENDED STRIPING CONFIGURATION FOR PROPOSED PAVEMENT; PHASE 1-4
		TCP (1-1)-18	CONVENTIONAL ROAD SHOULDER WORK	TCP (1-1b)	TO BE USED DURING PAVEMENT WIDENING AND PATH CONSTRUCTION - SHORT TERM DURATION; FOR CONSTRUCTION FROM STA 4+50 TO STA 12+50, STA 21+50 TO STA 29+00, STA 37+00 TO STA 39+00; PHASE 1-2
		TCP (1-2)-18	ONE-LANE TWO-WAY TRAFFIC CONTROL	TCP (1-2b)	FLAGGERS TO BE USED FOR LANE CLOSURE DURING PAVEMENT WIDENING, STREET CROSSING PAVEMENT REPLACEMENT, MATERIAL DELIVERIES, AND OTHER SHORT-TERM OPERATIONS; FOR CONSTRUCTION FROM STA 0+00 TO STA 21+50, PHASE 2-4
		TCP (1-3)-18	TRAFFIC SHIFTS ON TWO LANE ROADS	TCP (1-3a)	LANE CLOSURE DURING PAVEMENT WIDENING AND PATH CONSTRUCTION FOR SHORT TERM DURATION TO BE USED IF ADDITIONAL SPACE IS NEEDED THROUGHOUT PHASE 1-4
		WZ(STPM)-13	SHORT TERM PAVEMENT MARKINGS	NA	PAVEMENT WIDENING WILL REQUIRE REMOVAL AND PLACEMENT OF PAVEMENT MARKINGS INCLUDING DOUBLE NO-PASSING LINE AND SINGLE NO-PASSING LINE; PHASE 1-3
		WZ(BRK)-13	"GIVE US A BRAKE" SIGNS	UNDIVIDED HIGHWAY	BEFORE AND THROUGHOUT PROJECT LIMITS INCLUDE SIGNS FOR AN UNDIVIDED HIGHWAY; PHASE 1

As approved by the Engineer, provide uniformed off duty police officers and squad cars during lane closures, nighttime work or other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the governmental entity providing the officers for reimbursement. Complete the weekly tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month the approved services were provided. Reimbursement will not be made for coordination fees charged by any party. This work will be paid by force account method and in accordance with item 9.7.1.6 Law Enforcement Personnel.

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 by Engineer or Chief Inspector.

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 County of El Paso.

Place Best Method Practices 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.

Contractor shall be responsible for the placement of construction entrances/exits throughout the various phases of construction. Actual location will be determined by the contractor based on field conditions, work location(s), constraints, and needs; with approval of the County of El Paso,

or ENGINEER. Construction entrance/exit dimensions shall follow the guidelines outlined within the approved TxDOT standard.

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.

All backfill material (including but not limited to subgrade and base material) beneath the curb and/or curb and gutter is to be subsidiary to this Item.

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.

One (1) density test will be required per driveway.

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.

For repairs on the sidewalk, it will be required to be from joint to joint.

Item – 540 Metal Beam Guard Fence

The Contractor will abide by TxDOT's November 2014 edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Item 540.

Item – 544 Guardrail End Treatments

Furnish and install, move, or remove guardrail end treatments.

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 County of El Paso.

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

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directed, prior to removal. Re-erect reference markers at their original location upon completion of construction.

Item 658 – Delineator and Object Marker Assemblies

Install and remove delineator or object marker assembly as shown on plans or as directed.

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

All new pavement markings and signage shall conform to the most current edition of the "Texas Manual on Uniform Traffic Control Devices" (MUTCD).

All permanent striping within the roadway shall be reflective thermoplastic. All glass beads and pavement markings shall be purchased on the open market.

The quantity for all broken lines as shown on the plans accounts only for the actual installed pavement markings and does not include gap distance between 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.

Contractor shall be responsible for field-locating and recording by survey, the existing stripe alignment so that the final pavement markings may be placed in the exact location as the existing or as directed by the County of El Paso or its designated representative.

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.

Franklin Red is the gravel type and color.

- Loose Aggregate TY I is 1-1/2" Franklin 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.

Franklin Grey (Screenings) is a gravel type and color.

- Loose Aggregate TY III is 3/8"- (minus) Franklin Grey Screenings and should be placed at a 4" depth. Finished grade should match top of adjacent concrete or asphalt surfaces and compacted to allow for adequate ADA compliance.

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Secure either rock types listed above (or approved equal) that are clean and free of debris or foreign materials prior to placement and as approved by the engineer. Rock colors and/or selection shall not be changed without approval by the County of El Paso or its designated representative.

Item ELP1 – Railroad Tracks Crossing Improvements

Contractor shall coordinate with UPRR officials and UPRR construction contractor prior to performing work near UPRR facilities.

The contractor shall be responsible for obtaining UPRR's Railroad Protective Policy (insurance) for all work within 50' of UPRR property.

Contractor shall also be responsible for reimbursing UPRR for use of their flaggers, inspectors, and necessary personnel. All items relating to UPRR requirements shall be subsidiary to this item.

The Contractor will abide by Special Specification ELP1 as shown on plans or as directed by County Inspector.

Item ELP2 – Pedestrian Illumination Assemblies

The location of LED solar pedestrian illumination poles (10-foot height) is diagrammatic only and may be shifted by the Engineer to accommodate Local conditions.

Contractor must submit shop drawings for Pedestrian Illumination approval.

Contractor to contact COEP 1 week prior to delivery of equipment for storage location.

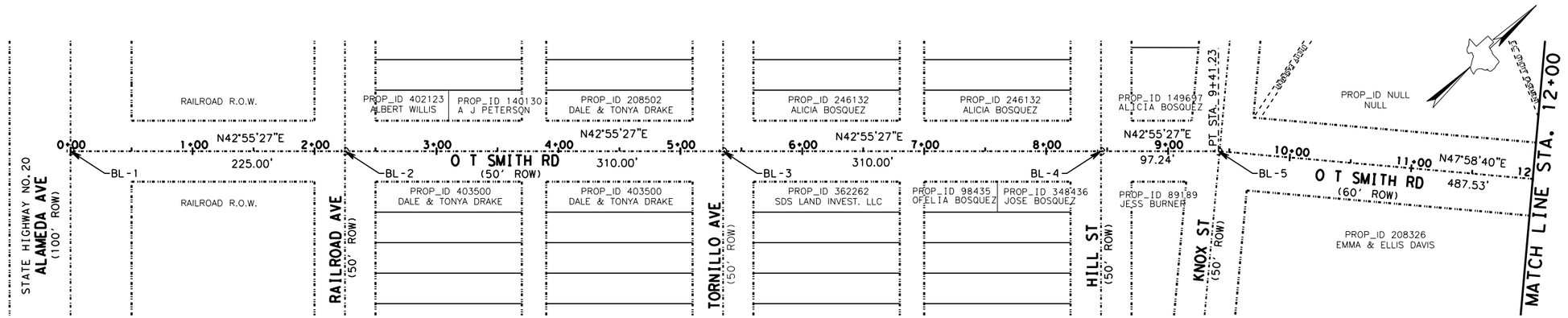
Submittals. Submit fabrication drawings and calculations for approval to the project engineer.

Luminaire Structural Support Requirements. Lighting poles, arms, and anchor bolt assemblies shall have a 25-year design life to resist dead loads, ice loads, and the required basic wind speeds safely at the location of installation in accordance with the current edition of the AASHTO Design Specifications. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.

Item ELP3 – Fixed Bollards

Install fixed bollards as shown on the plans.

Contractor must submit shop drawings for approval. Fixed bollards shall consist of 6" galvanized standard steel pipe (painted yellow), with Class A concrete and with a formed domed cap.



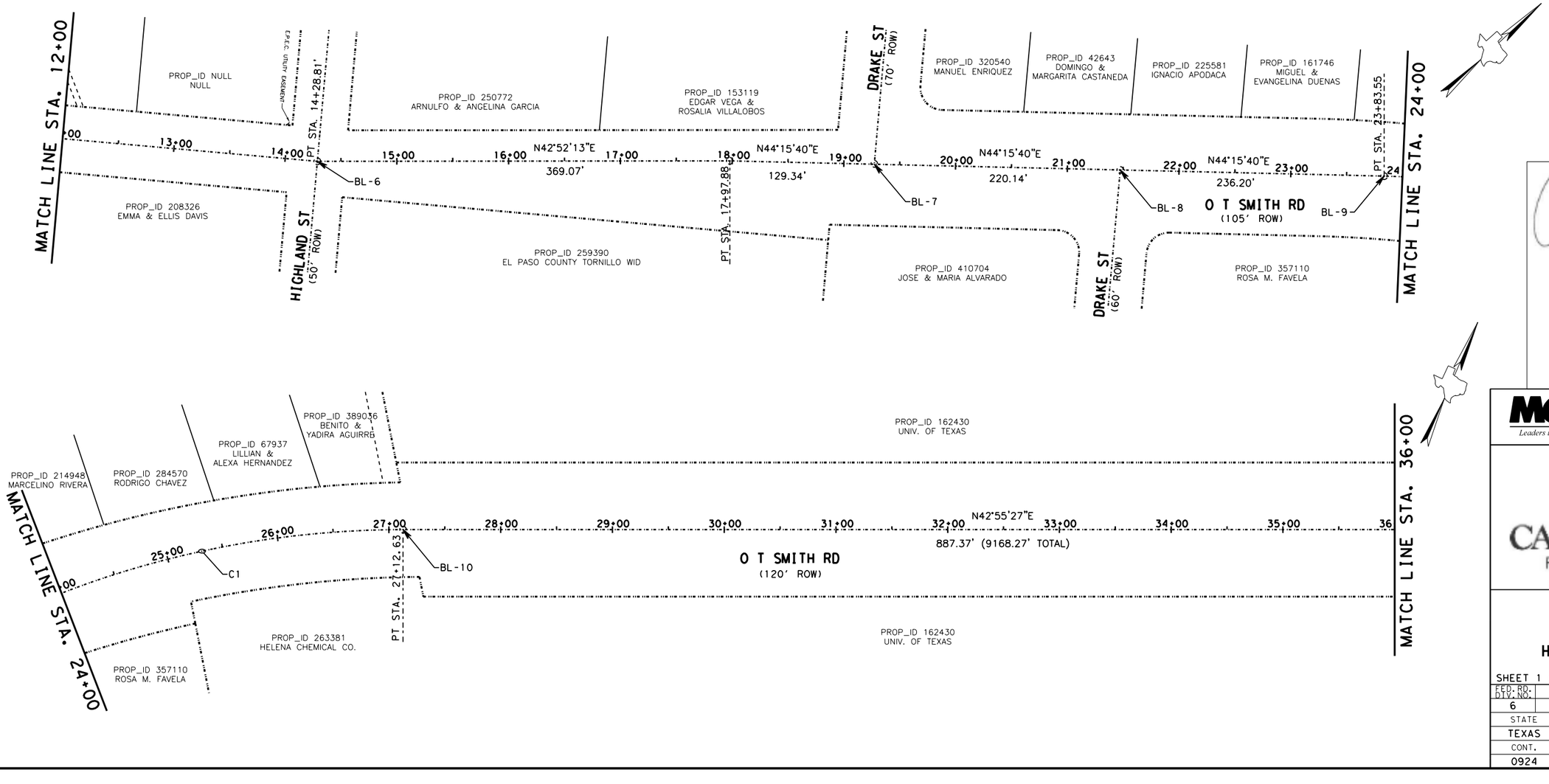
HORIZONTAL CONTROL DATA

CONTROL PONT #	DESCRIPTION	NORTHING	EASTING
BL-1	EXISTING MONUMENT	10535842.760	502659.535
BL-2	STA 2+25	10536007.517	502812.766
BL-3	STA 5+35	10536234.516	503023.885
BL-4	STA 8+45	10536461.516	503235.005
BL-5	STA 9+41.23	10536532.717	503301.225
BL-6	STA 14+28.81	10536858.375	503662.752
BL-7	STA 19+27.21	10537221.778	504003.856
BL-8	STA 21+47.36	10537379.151	504157.758
BL-9	PT STA. 23+83.55	10537548.308	504322.607
BL-10	PT STA. 27+12.63	10537734.233	504591.640

CURVE DATA

CURVE	RADIUS	LENGTH	CHORD	BEARING	DELTA
C1	850.00'	329.08	327.03	N55°2108"E	22°10'56"

0 50 100
SCALE: 1"=100'



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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

PROJECT LAYOUT/ HORIZONTAL CONTROL

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		4
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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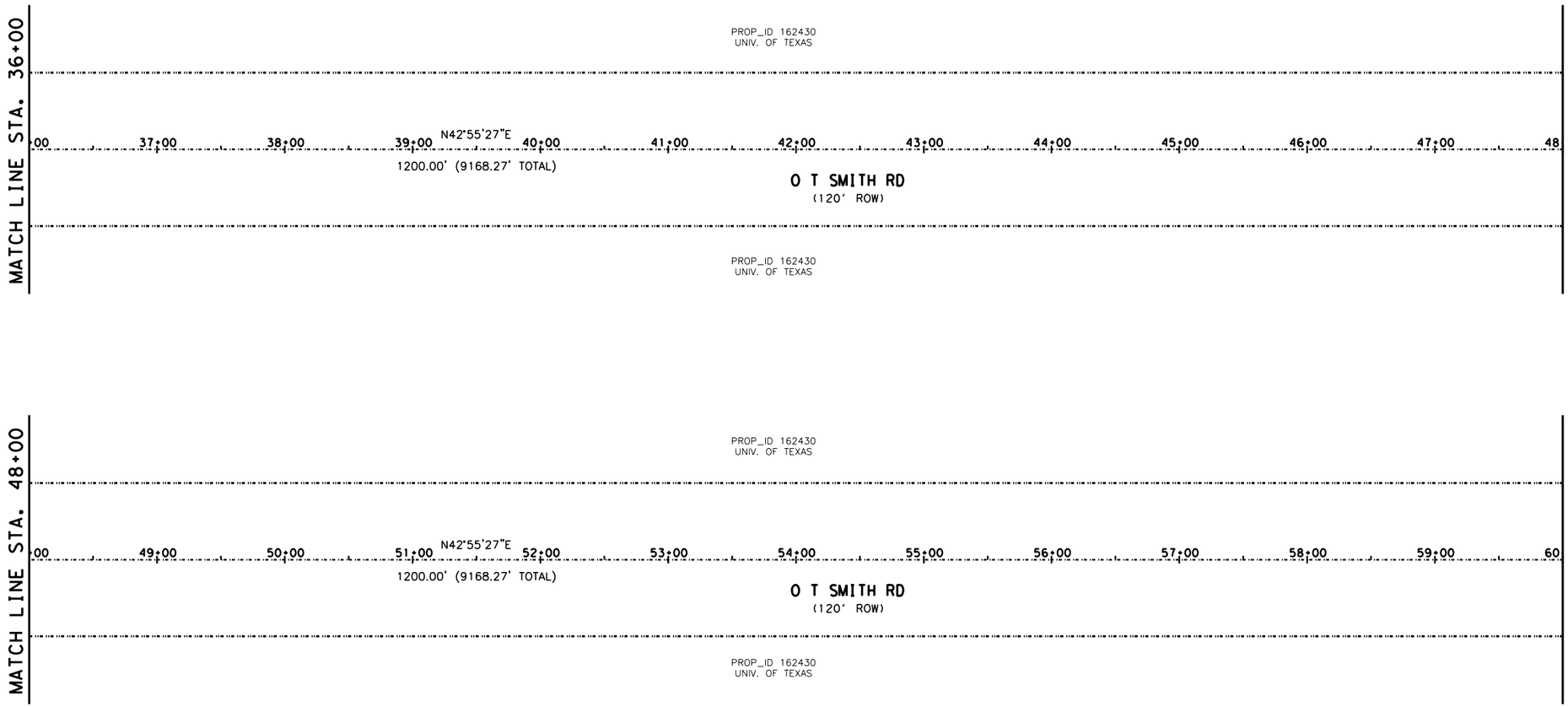

0 50 100
SCALE: 1"=100'

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

PROJECT LAYOUT / HORIZONTAL CONTROL

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		5
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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0 50 100
SCALE: 1"=100'

O T SMITH RD
(100' ROW)

PROP_ID 162430
UNIV. OF TEXAS

PROP_ID 110014
UNIV. OF TEXAS

MATCH LINE STA. 72+00

72+00 73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84

N42°55'27"E
1200.00' (9168.27' TOTAL)

O T SMITH RD
(120' ROW)

MATCH LINE STA. 84+00

PROP_ID 162430
UNIV. OF TEXAS

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

MATCH LINE STA. 84+00

PROP_ID 110014
UNIV. OF TEXAS

84+00 85+00 86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00 94+00 95+00 96

N42°55'27"E
1200.00' (9168.27' TOTAL)

O T SMITH RD
(120' ROW)

MATCH LINE STA. 96+00

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

10903

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH

**PROJECT LAYOUT/
HORIZONTAL CONTROL**

SHEET 3 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		6
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

HORIZONTAL CONTROL DATA

CONTROL PONT #	DESCRIPTION	NORTHING	EASTING
BL-11	PT STA. 118+80.91	10541398.400	512995.874
BL-12	PT STA. 123+75.56	10541684.944	513399.082

0 50 100
SCALE: 1"=100'

MATCH LINE STA. 96+00

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00

N42°55'27"E
1200.00' (9168.27' TOTAL)

O T SMITH RD
(120' ROW)

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

MATCH LINE STA. 108+00

MANUEL F. AGUILERA HGWY
(200' ROW)

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

MATCH LINE STA. 108+00

108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00

N42°55'27"E
1080.91' (9168.27' TOTAL)

O T SMITH RD
(120' ROW)

PT STA. 118+80.91

BL-11

N31°04'52"E
119.09'

MATCH LINE STA. 120+00

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

MATCH LINE STA. 120+00

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

PT STA. 123+75.56

120+00 121+00 122+00 123+00

N31°04'52"E
375.56'

N39°10'53"E

O T SMITH RD
(120' ROW)

BL-12

PROP_ID 35194
PEOPLE OF THE
STATE OF TEXAS

INTERSTATE HIGHWAY 10

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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Leaders in Project Delivery & Performance

TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

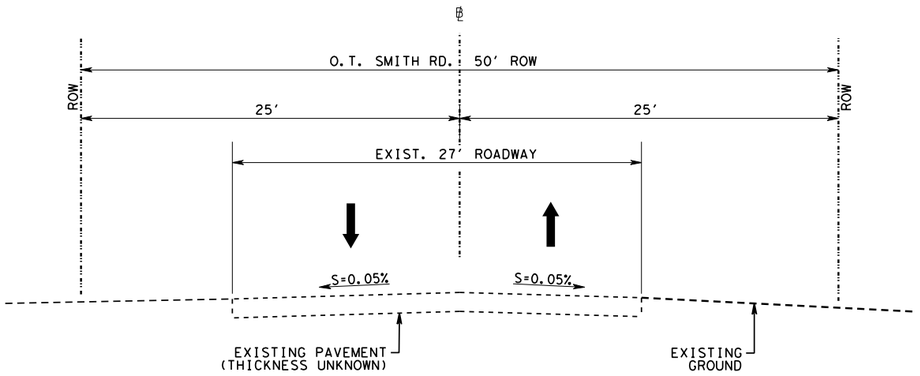
TORNILLO SHARED USE PATH

PROJECT LAYOUT/ HORIZONTAL CONTROL

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	7

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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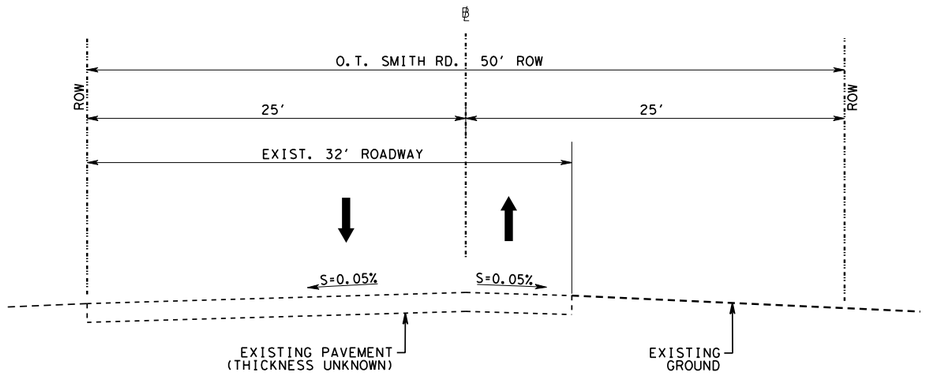

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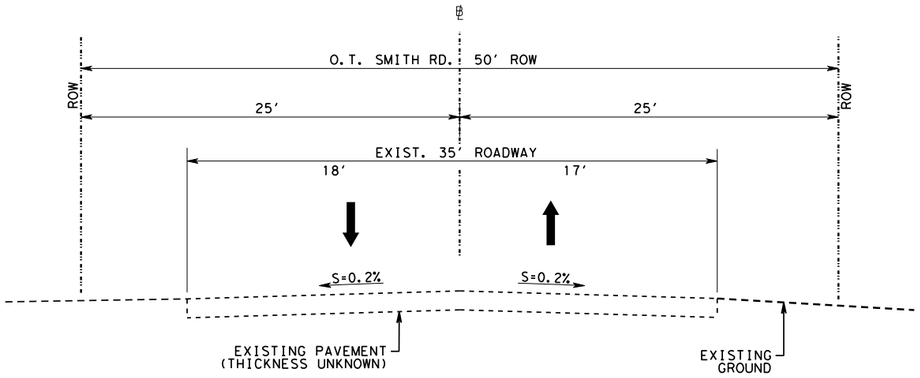

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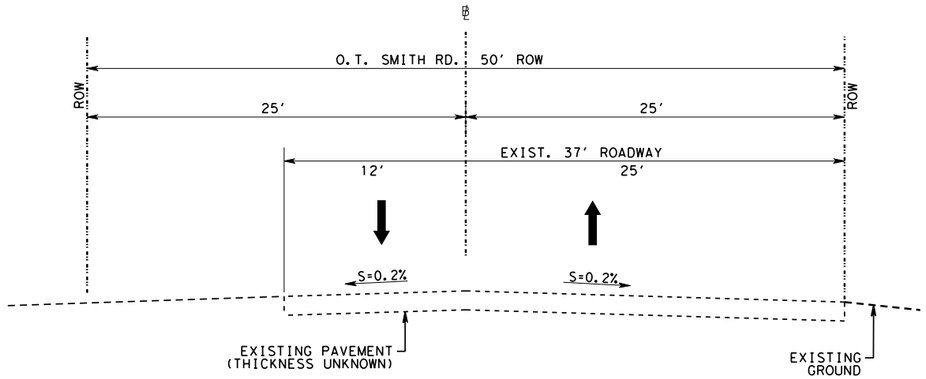

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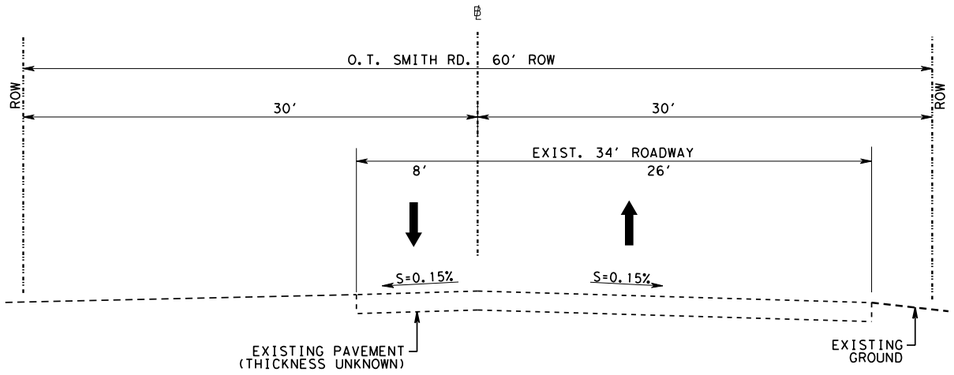
STA. 5+00 - STA. 9+50



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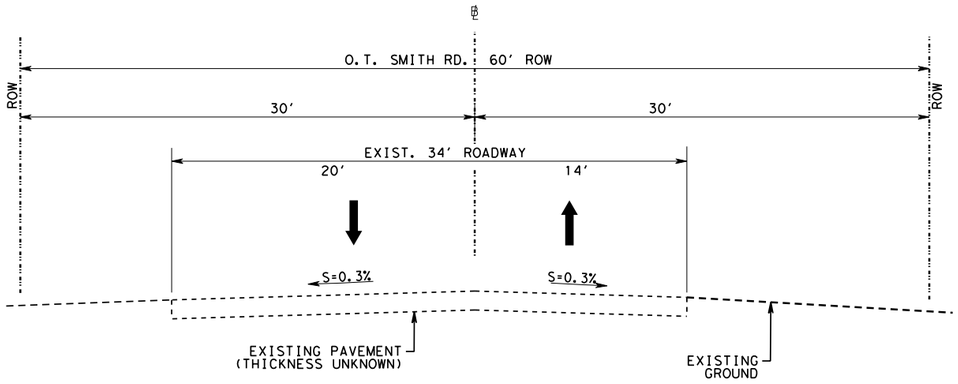

EXISTING TYPICAL SECTION
STA. 11+00 - STA. 14+00

GENERAL NOTES

1. ℄ IS THE DESIGNATION FOR THE CENTERLINE OR BASELINE OF THE ROADWAY.
2. TYPICAL SECTIONS ARE FOR GENERAL INFORMATION AND NOT CONSTRUCTION DETAILS.
3. FOR TYPICAL SECTION STATIONING REFER TO HORIZONTAL DATA SHEETS AND PROJECT LAYOUT SHEETS.

0 5 10
SCALE: 1"=10'

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
EXISTING TYPICAL SECTIONS

SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		8
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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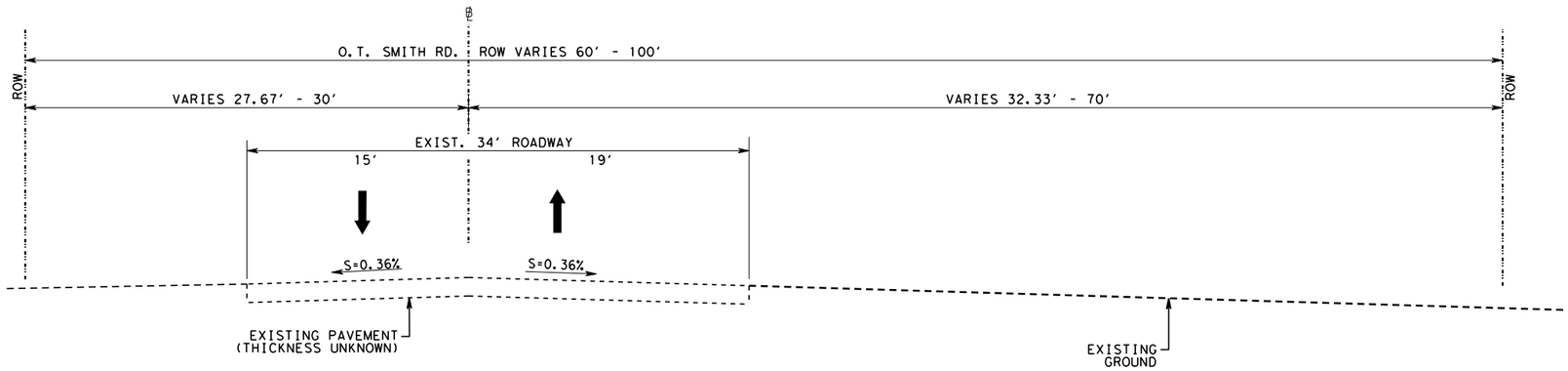

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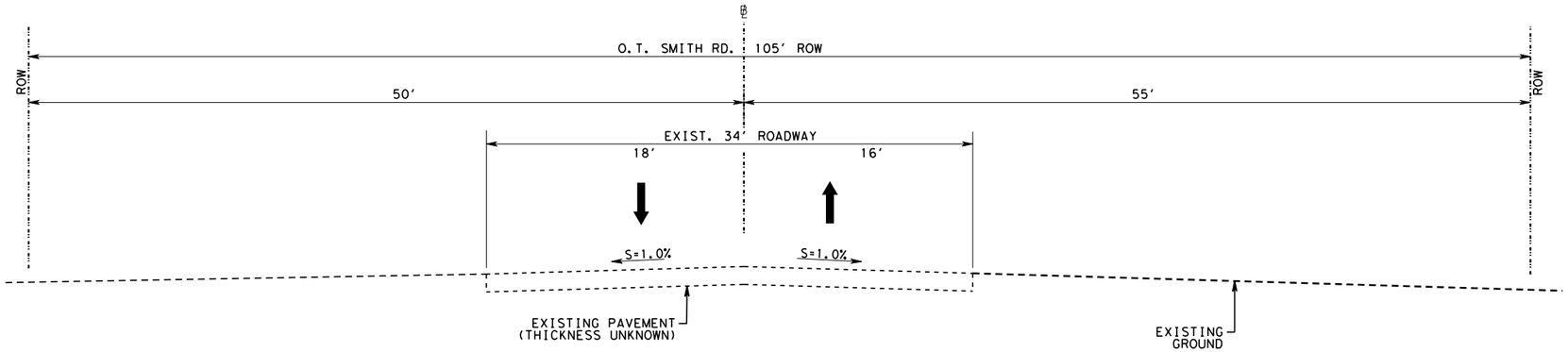
STA. 14+00 - STA. 19+00



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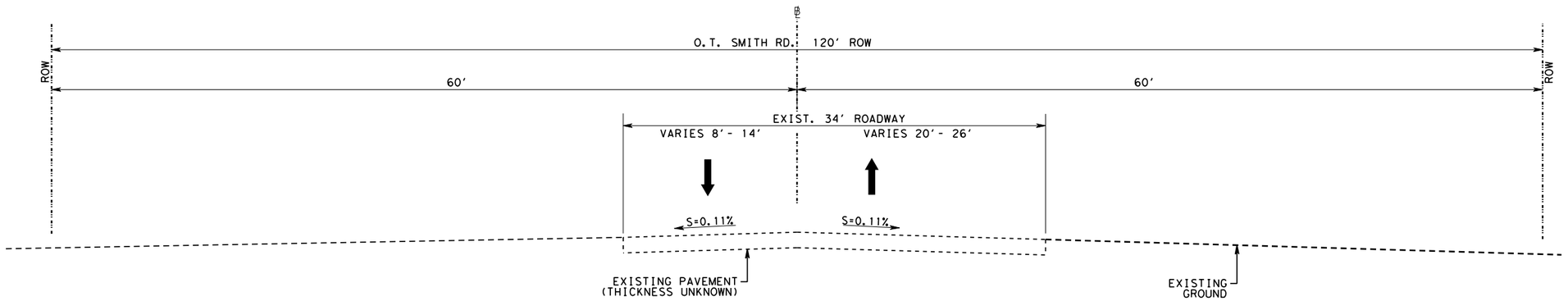

EXISTING TYPICAL SECTION
STA. 27+00 - STA. 71+00

GENERAL NOTES

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0 5 10
SCALE: 1"=10'

STATE OF TEXAS
ROBERTO MORENO
60910
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TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
EXISTING TYPICAL SECTIONS

SHEET 2 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		9
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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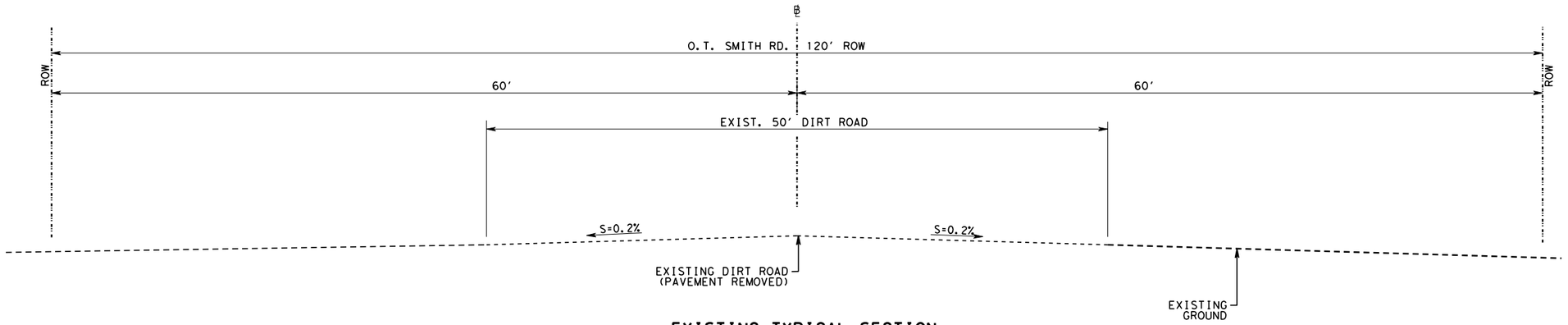

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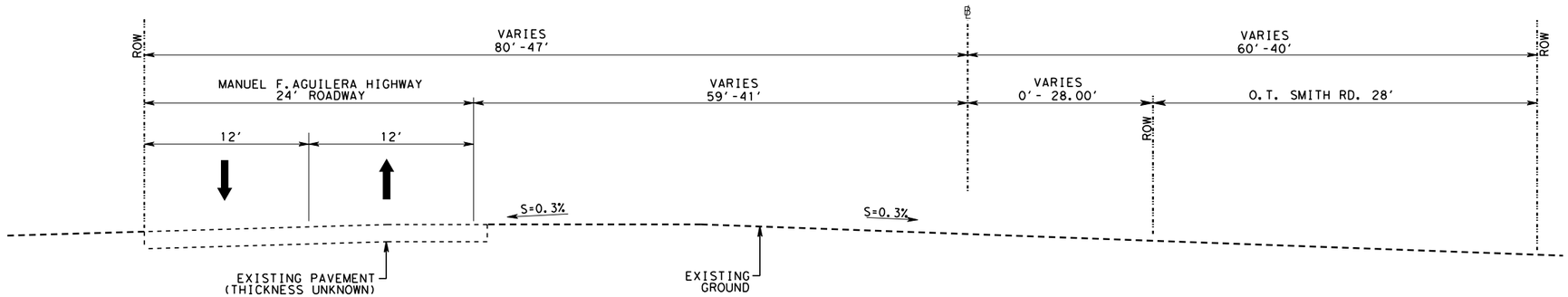
STA. 71+00 - STA. 109+70



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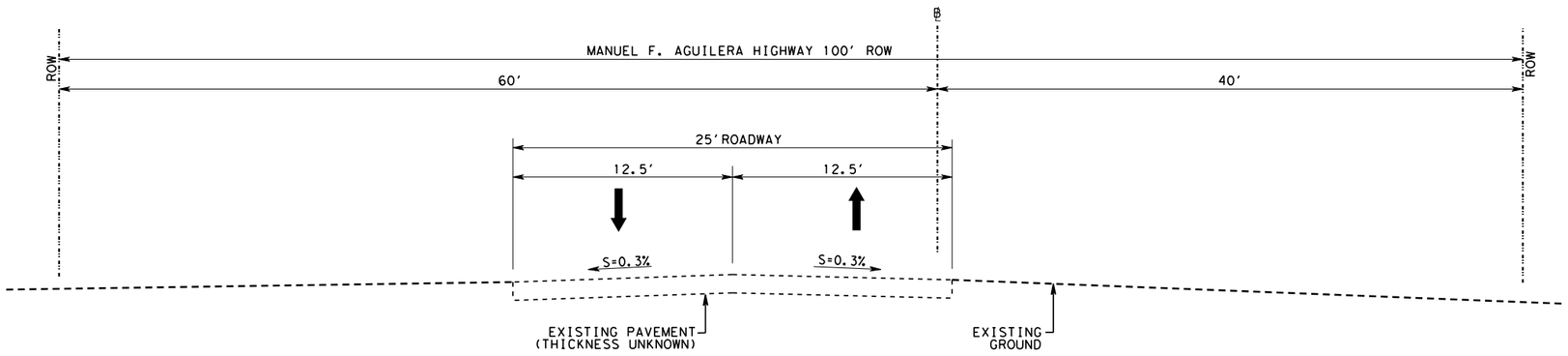
STA. 109+70 - STA. 112+00



EXISTING TYPICAL SECTION
STA. 112+00 - STA. 123+12.70

GENERAL NOTES

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0 5 10
SCALE: 1"=10'

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CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
EXISTING TYPICAL SECTIONS

SHEET 3 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		10
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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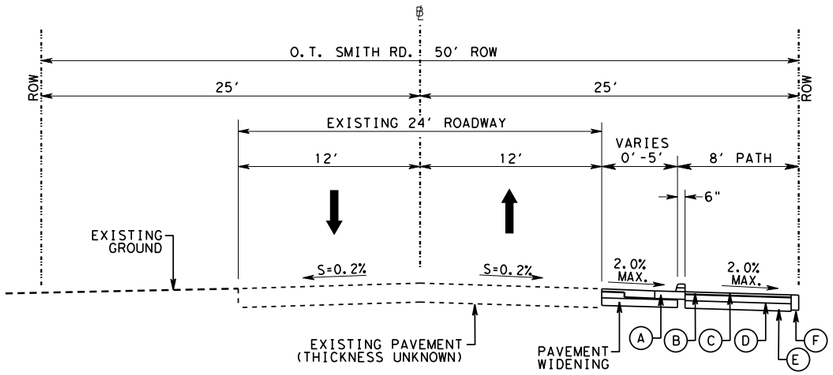
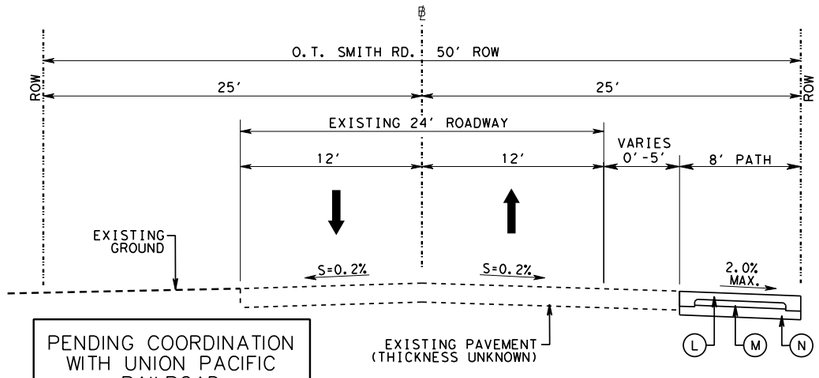
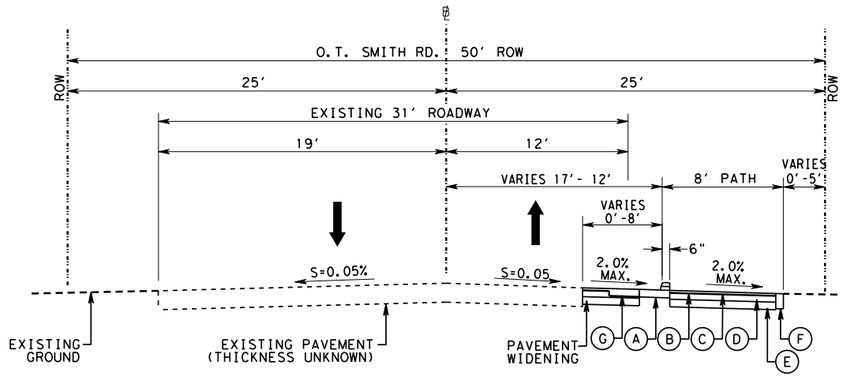


PROPOSED TYPICAL SECTION
STA. 0+29.86 - STA. 1+16.64



PENDING COORDINATION WITH UNION PACIFIC RAILROAD

PROPOSED TYPICAL SECTION
STA. 1+16.64 - STA. 1+56.53
RAILROAD R.O.W.



PROPOSED TYPICAL SECTION
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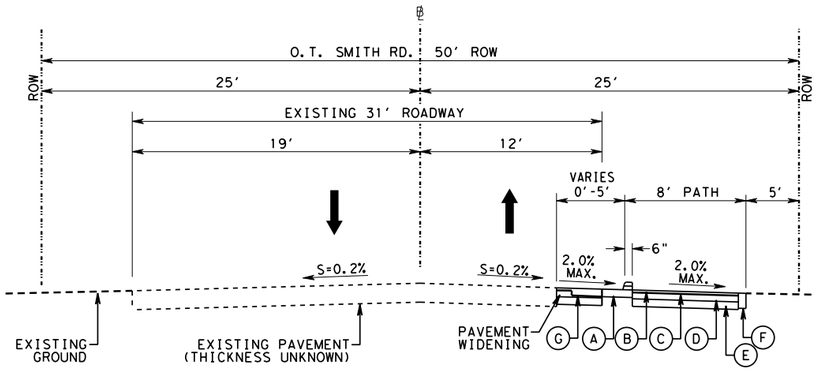
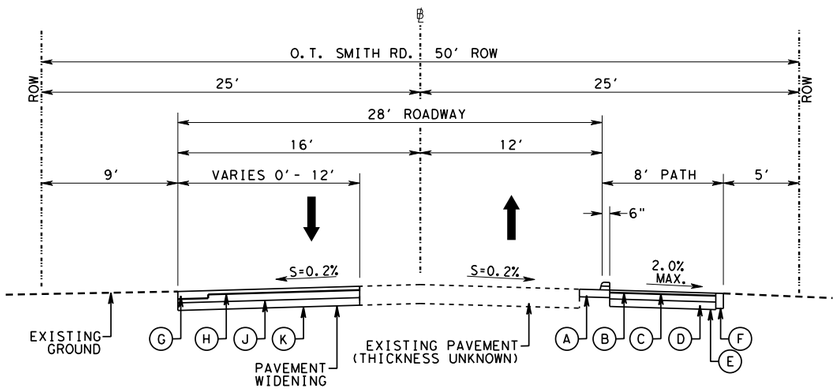
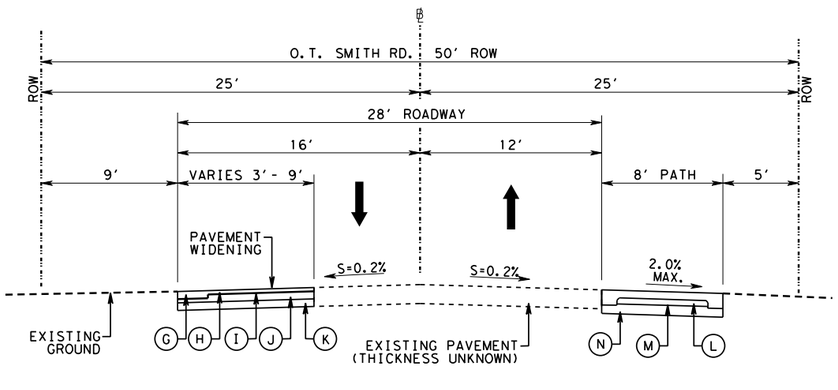


PROPOSED TYPICAL SECTION
STA. 2+00 - STA. 4+00
RAILROAD AVENUE TO KNOX STREET



PROPOSED TYPICAL SECTION
STA. 4+00 - STA. 5+00



PROPOSED TYPICAL SECTION
STA. 5+00 - STA. 7+05

0 5 10
SCALE: 1"=10'

GENERAL NOTES

1. ℄ IS THE DESIGNATION FOR THE CENTERLINE OR BASELINE OF THE ROADWAY.
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3. FOR TYPICAL SECTION STATIONING REFER TO HORIZONTAL DATA SHEETS AND PROJECT LAYOUT SHEETS.

SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

- (A) SPECIAL CURB
- (B) 2" HMAC TYPE D
- (C) PRIME COAT (CCS-1H)
- (D) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (E) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557
- (F) 6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

- (L) 6" REINFORCED CONCRETE
- (M) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (N) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

- (G) 2' x 6" THICKENED PAVEMENT EDGE
- (H) 2 1/2" HMAC TYPE C
- (I) PRIME COAT (CCS-1H)
- (J) 6" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (K) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY PROPOSED TYPICAL SECTIONS

SHEET 1 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	11

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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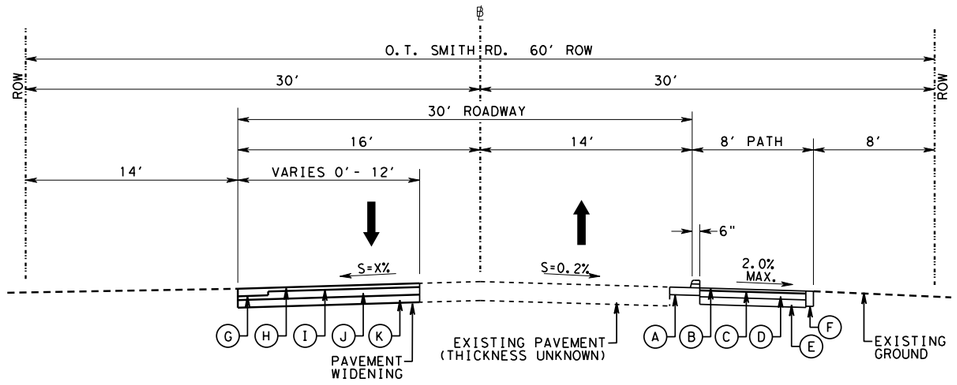
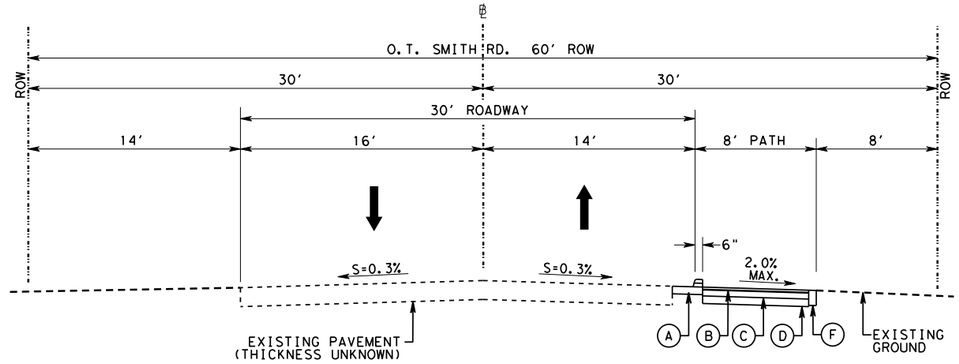


PROPOSED TYPICAL SECTION
STA. 7+05 - STA. 12+89.50



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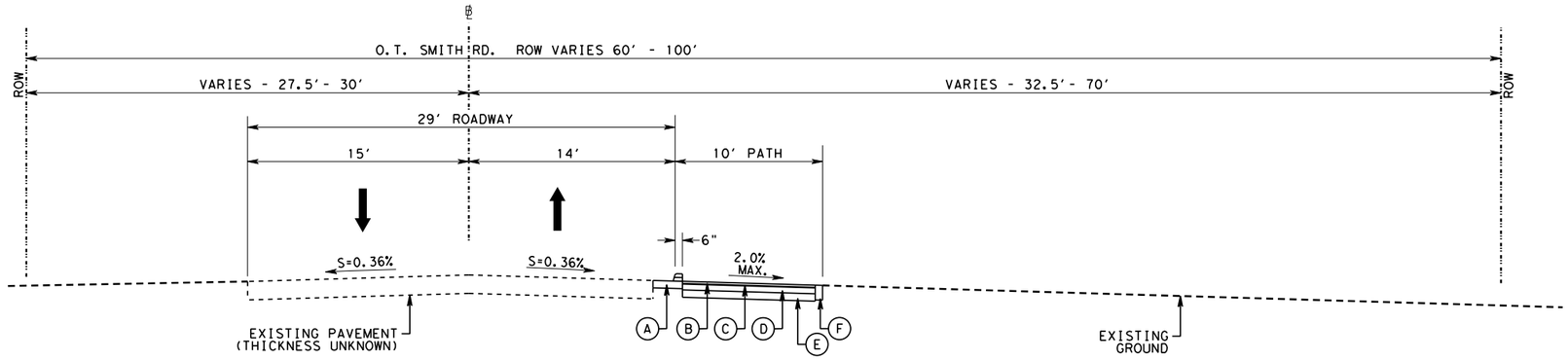
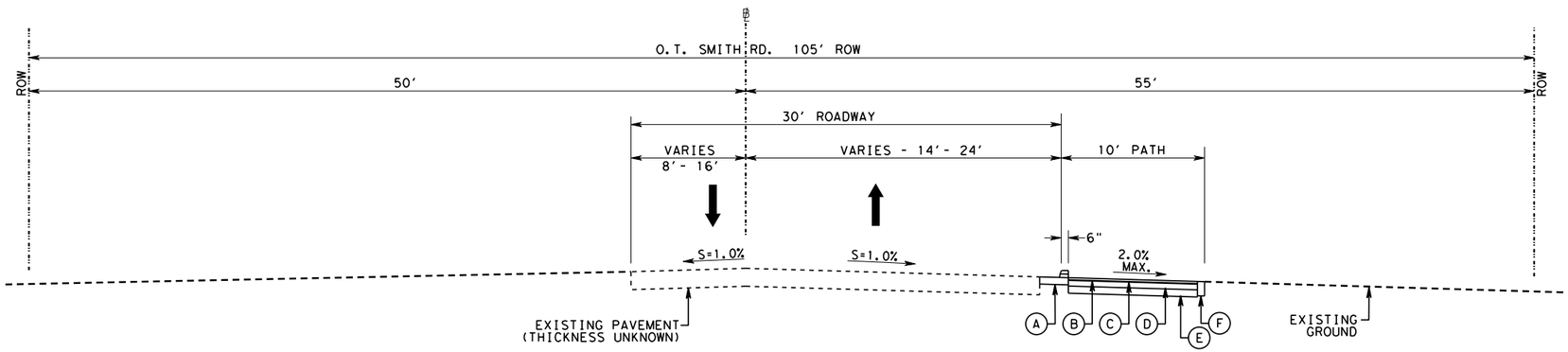


PROPOSED TYPICAL SECTION
STA. 14+25 - STA. 19+00
HIGHLAND STREET TO DRAKE STREET



PROPOSED TYPICAL SECTION
STA. 19+00 - STA. 28+50

GENERAL NOTES

1. ℄ IS THE DESIGNATION FOR THE CENTERLINE OR BASELINE OF THE ROADWAY.
2. TYPICAL SECTIONS ARE FOR GENERAL INFORMATION AND NOT CONSTRUCTION DETAILS.
3. FOR TYPICAL SECTION STATIONING REFER TO HORIZONTAL DATA SHEETS AND PROJECT LAYOUT SHEETS.

SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

- (A) SPECIAL CURB
- (B) 2" HMAC TYPE D
- (C) PRIME COAT (CCS-1H)
- (D) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (E) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557
- (F) 6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

- (L) 6" REINFORCED CONCRETE
- (M) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (N) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

- (G) 2' x 6" THICKENED PAVEMENT EDGE
- (H) 2 1/2" HMAC TYPE C
- (I) PRIME COAT (CCS-1H)
- (J) 6" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (K) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

0 5 10
SCALE: 1"=10'

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
PROPOSED TYPICAL SECTIONS

SHEET 2 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		12
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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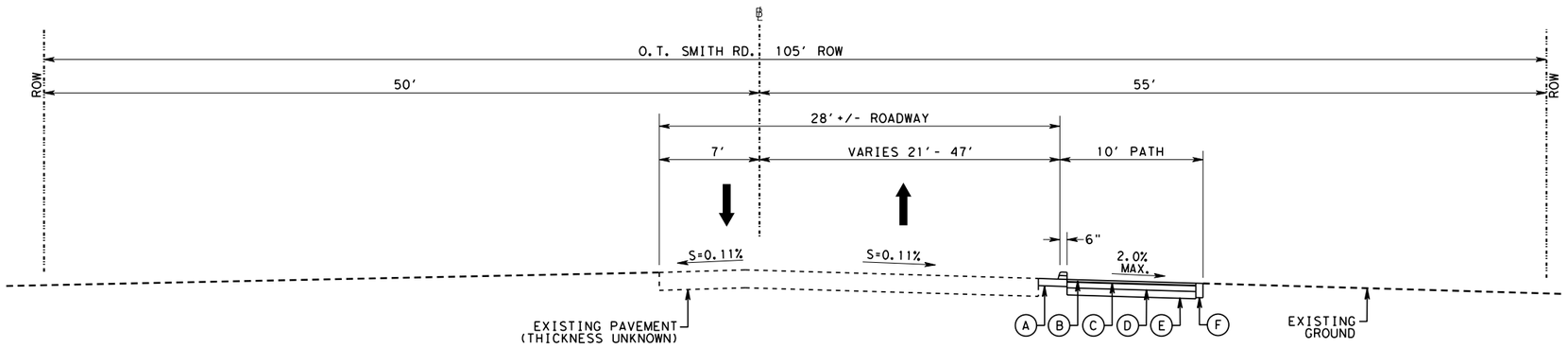
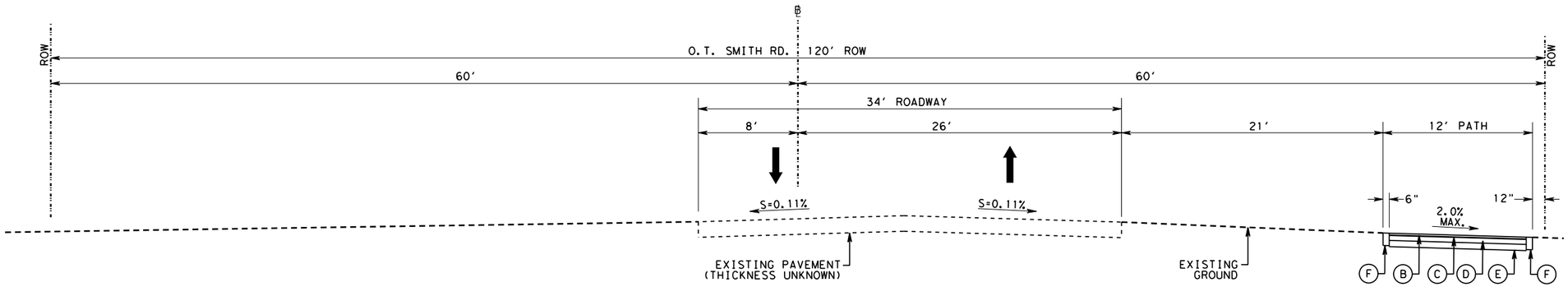
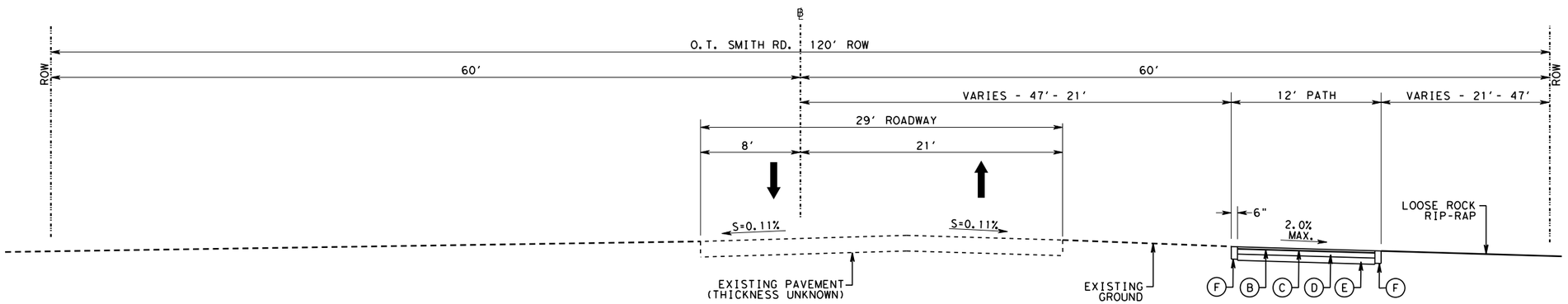


PROPOSED TYPICAL SECTION
STA. 28+50 - STA. 29+50



PROPOSED TYPICAL SECTION
STA. 29+50 - STA. 37+20



PROPOSED TYPICAL SECTION
STA. 37+20 - STA. 37+90

GENERAL NOTES

1. ℄ IS THE DESIGNATION FOR THE CENTERLINE OR BASELINE OF THE ROADWAY.
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SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

- (A) SPECIAL CURB
- (B) 2" HMAC TYPE D
- (C) PRIME COAT (CCS-1H)
- (D) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (E) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557
- (F) 6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

- (L) 6" REINFORCED CONCRETE
- (M) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (N) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

- (G) 2' x 6" THICKENED PAVEMENT EDGE
- (H) 2 1/2" HMAC TYPE C
- (I) PRIME COAT (CCS-1H)
- (J) 6" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (K) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
PROPOSED TYPICAL SECTIONS

SHEET 3 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		13
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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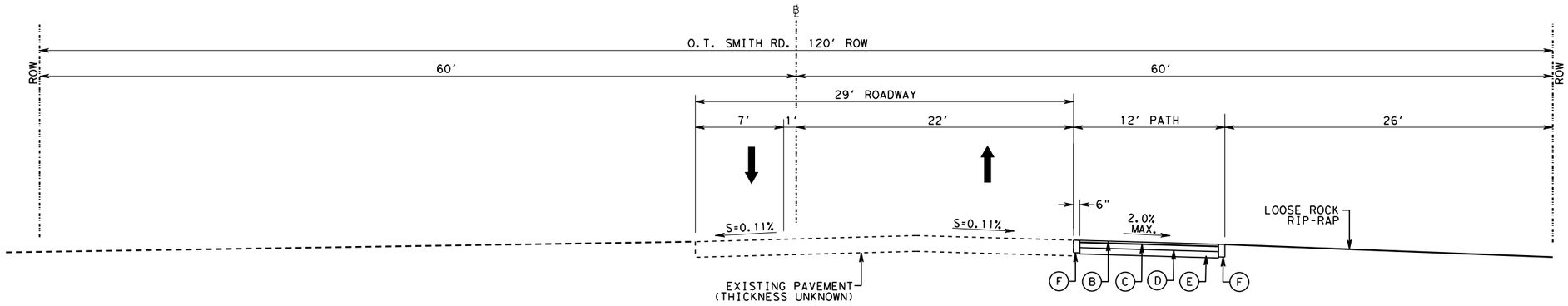
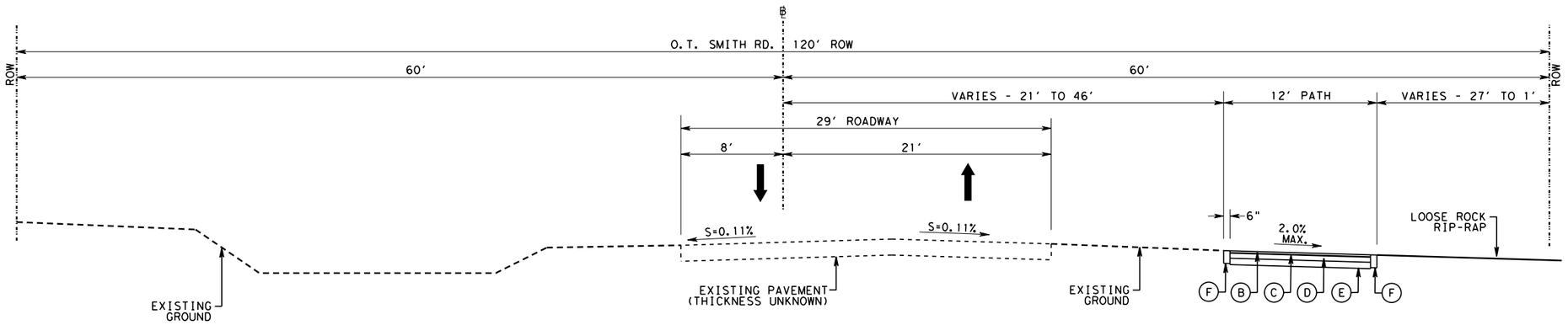
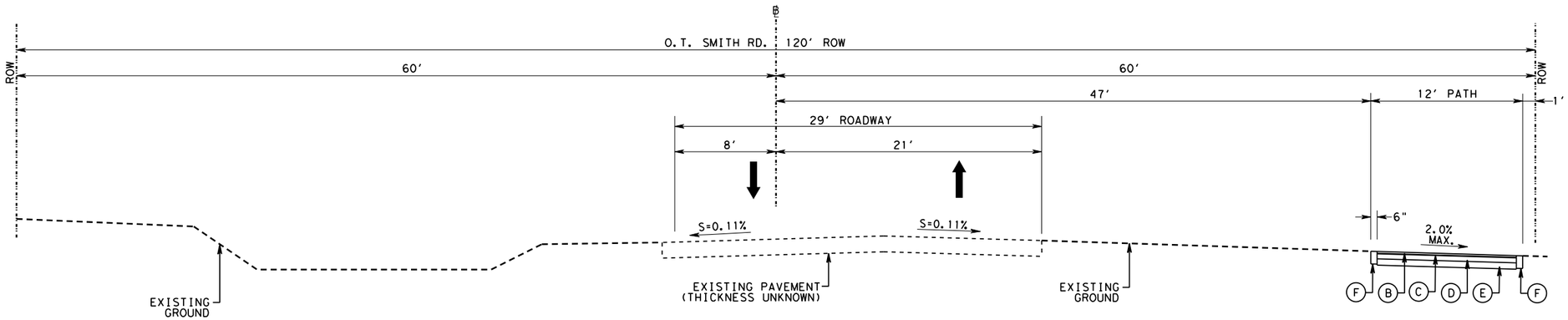


PROPOSED TYPICAL SECTION
STA. 37+90 - STA. 38+60



PROPOSED TYPICAL SECTION
STA. 38+60 - STA. 39+30



PROPOSED TYPICAL SECTION
STA. 39+30 - STA. 68+95

0 5 10
SCALE: 1"=10'

GENERAL NOTES

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SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

(A) SPECIAL CURB
(B) 2" HMAC TYPE D
(C) PRIME COAT (CCS-1H)
(D) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
(E) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557
(F) 6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

(L) 6" REINFORCED CONCRETE
(M) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
(N) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

(G) 2' x 6" THICKENED PAVEMENT EDGE
(H) 2 1/2" HMAC TYPE C
(I) PRIME COAT (CCS-1H)
(J) 6" AGGR. BASE COURSE TY A, GRADE 1 OR 2
(K) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
PROPOSED TYPICAL SECTIONS

SHEET 4 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		14
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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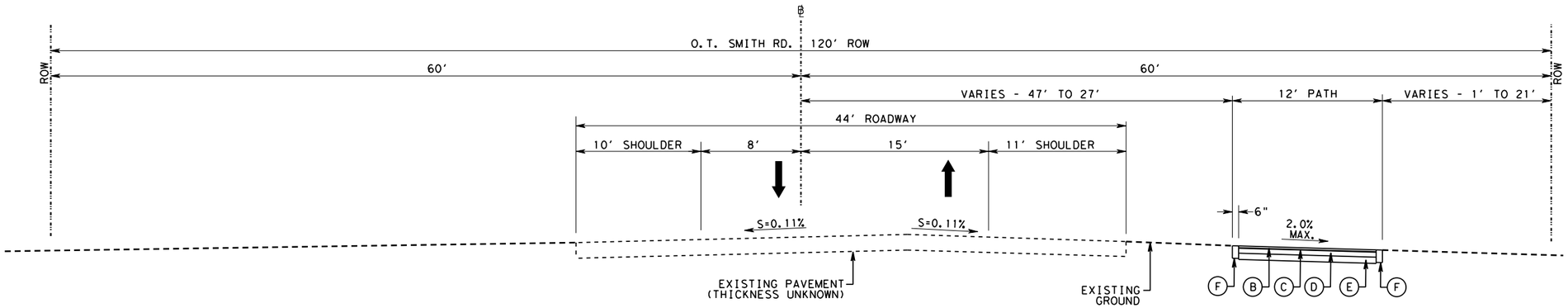
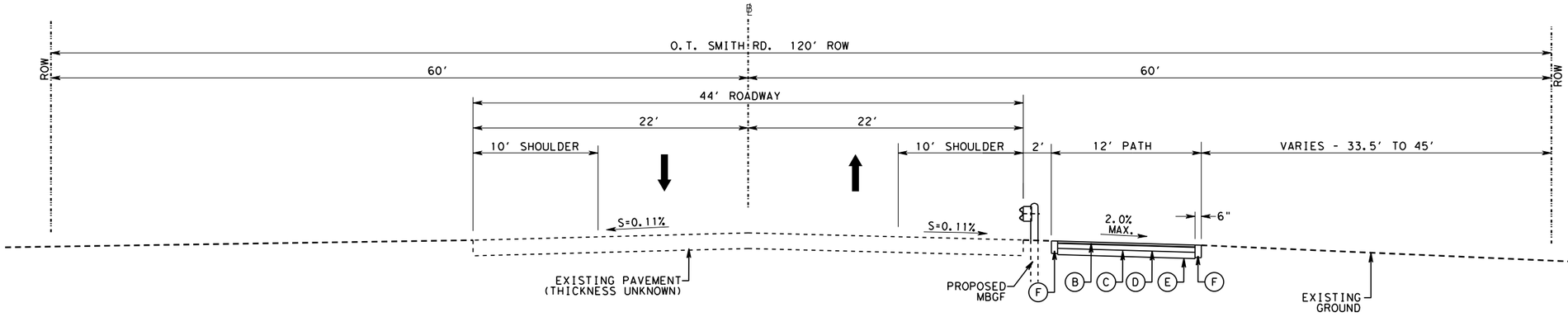
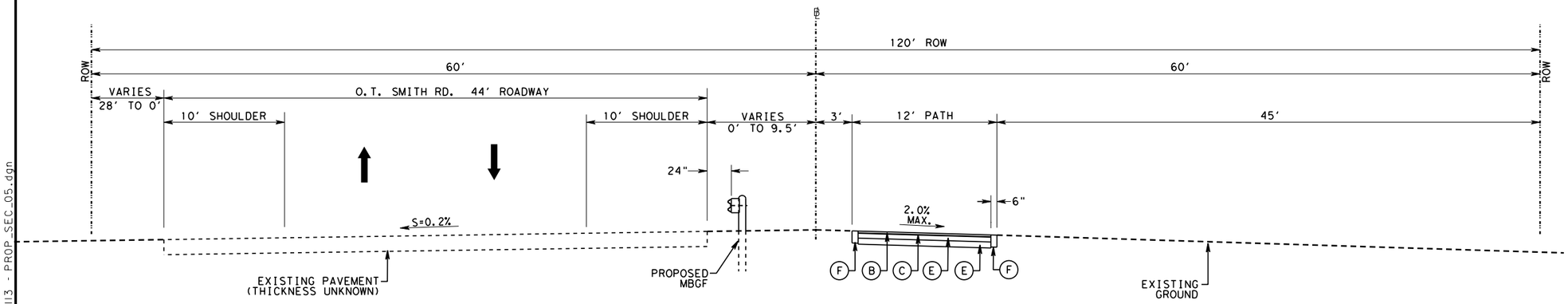


PROPOSED TYPICAL SECTION
STA. 68+95 - STA. 70+25



PROPOSED TYPICAL SECTION
STA. 70+25 - STA. 72+23



PROPOSED TYPICAL SECTION
STA. 72+23 - STA. 74+00

SCALE: 1"=10'

GENERAL NOTES

1. ℄ IS THE DESIGNATION FOR THE CENTERLINE OR BASELINE OF THE ROADWAY.
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3. FOR TYPICAL SECTION STATIONING REFER TO HORIZONTAL DATA SHEETS AND PROJECT LAYOUT SHEETS.

SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

SPECIAL CURB

2" HMAC TYPE D

PRIME COAT (CCS-1H)

5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

6" REINFORCED CONCRETE

5" AGGR. BASE COURSE TY A, GRADE 1 OR 2

8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

2' x 6" THICKENED PAVEMENT EDGE

2 1/2" HMAC TYPE C

PRIME COAT (CCS-1H)

6" AGGR. BASE COURSE TY A, GRADE 1 OR 2
8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
PROPOSED TYPICAL SECTIONS

SHEET 5 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		15
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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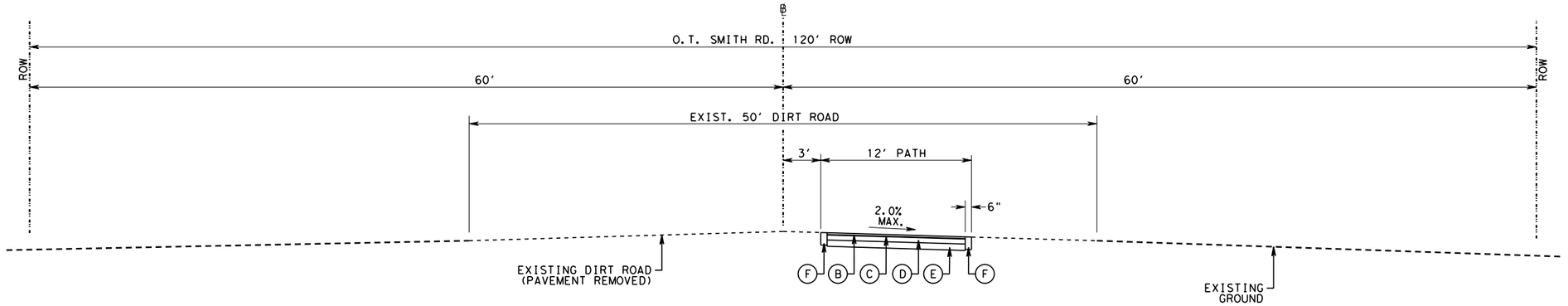
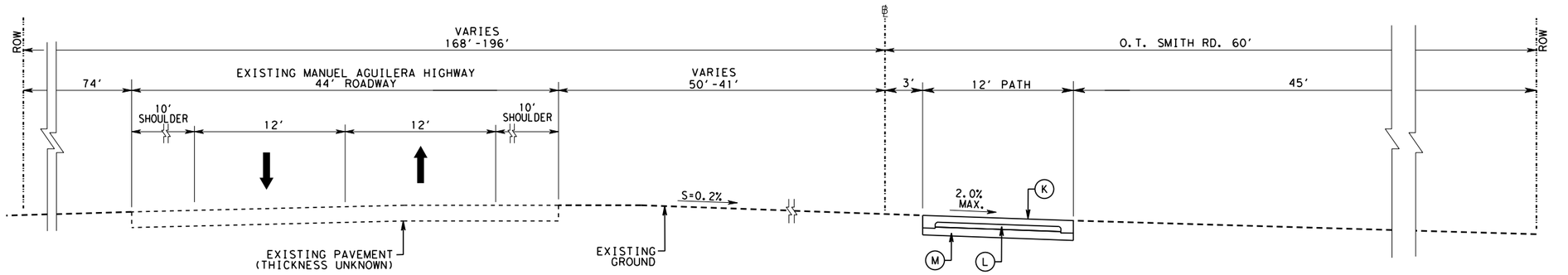
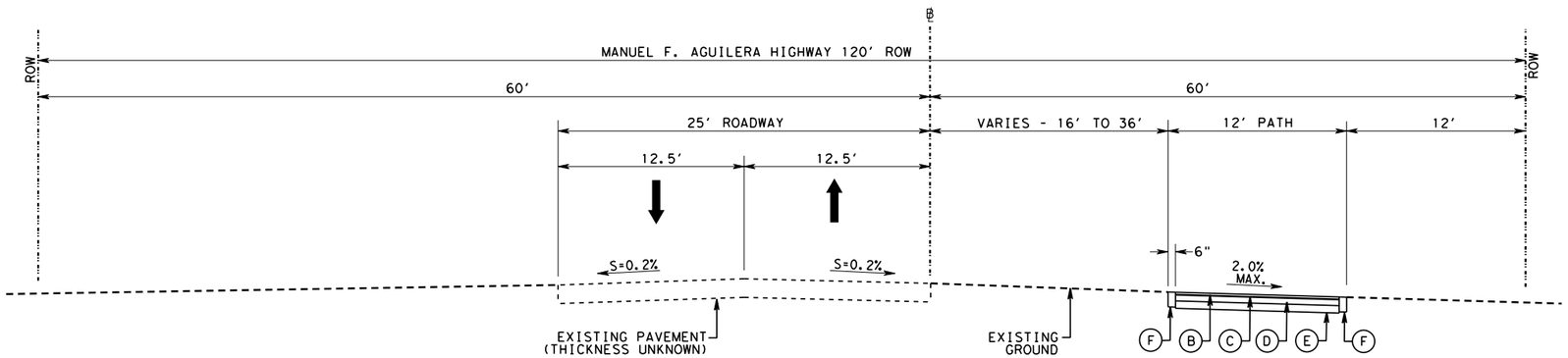


PROPOSED TYPICAL SECTION
STA. 74+00 - STA. 76+00



PROPOSED TYPICAL SECTION
STA. 76+00 - STA. 77+00



PROPOSED TYPICAL SECTION
STA. 77+00 - STA. 104+00
STA. 107+00 - STA. 109+70
STA. 112+00 - STA. 121+62

GENERAL NOTES

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SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

- (A) SPECIAL CURB
- (B) 2" HMAC TYPE D
- (C) PRIME COAT (CCS-1H)
- (D) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (E) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557
- (F) 6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

- (L) 6" REINFORCED CONCRETE
- (M) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (N) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

- (G) 2' x 6" THICKENED PAVEMENT EDGE
- (H) 2 1/2" HMAC TYPE C
- (I) PRIME COAT (CCS-1H)
- (J) 6" AGGR. BASE COURSE TY A, GRADE 1 OR 2
- (K) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY PROPOSED TYPICAL SECTIONS

SHEET 6 OF 7

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		16
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

0 5 10
SCALE: 1"=10'

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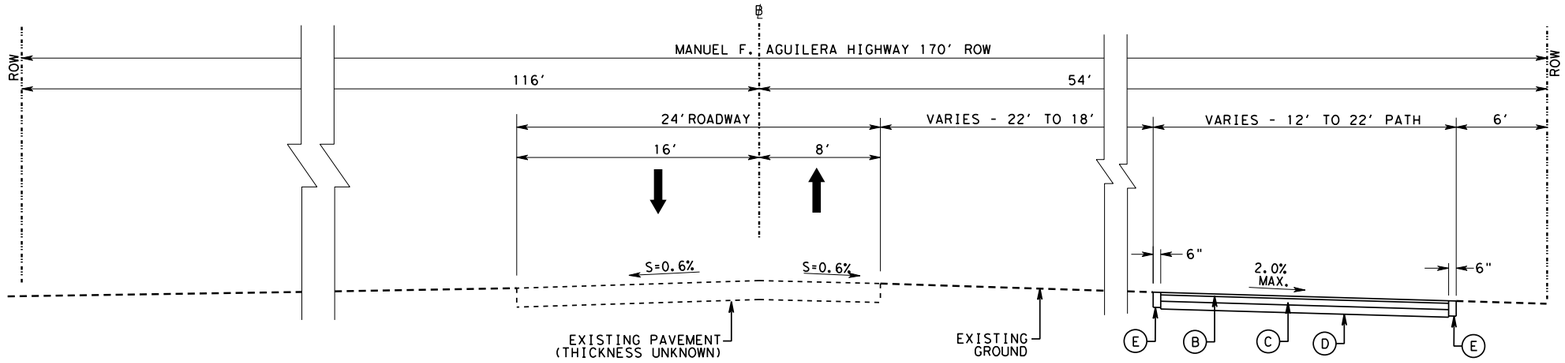
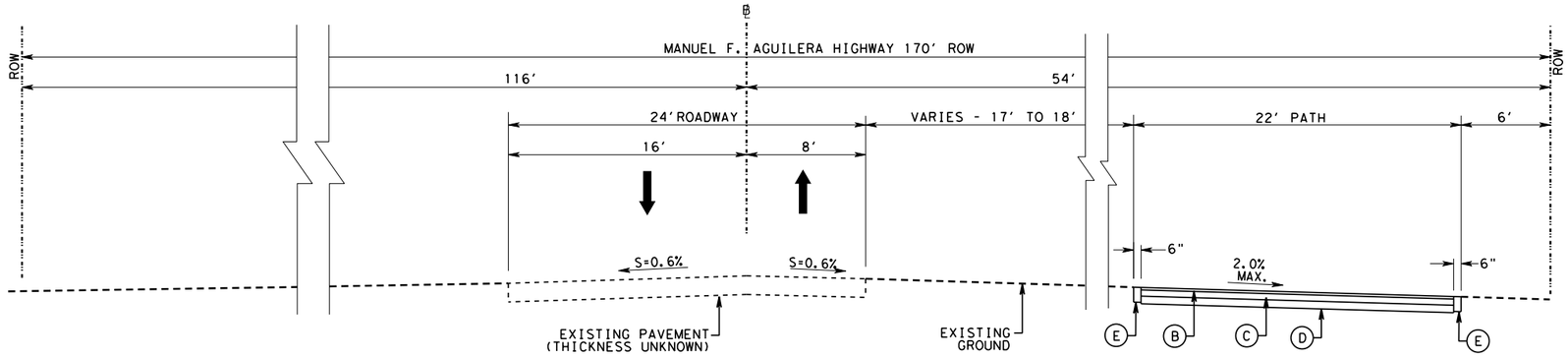
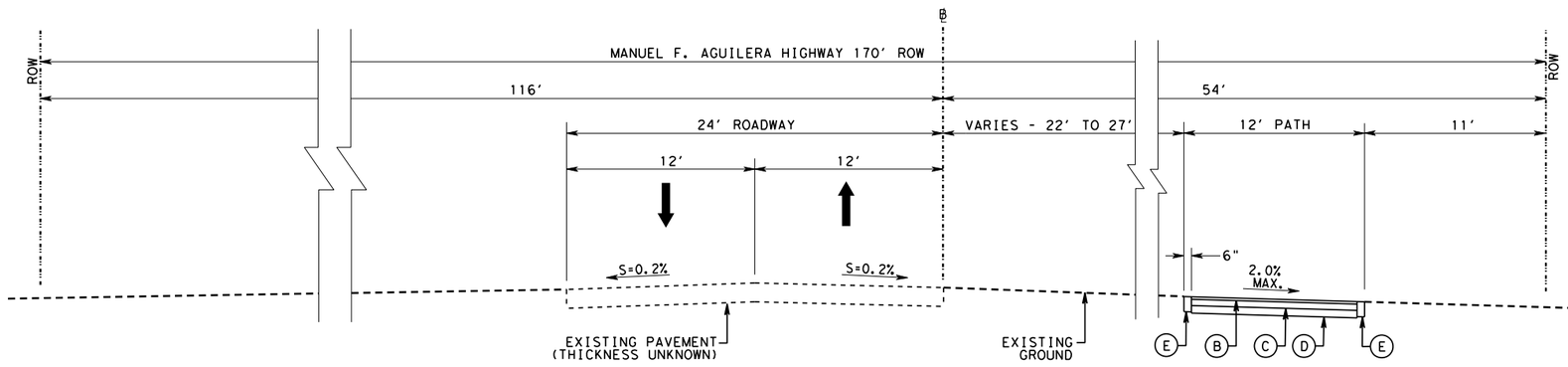


PROPOSED TYPICAL SECTION
STA. 121+62 121+67
STA. 121+88 121+93



PROPOSED TYPICAL SECTION
STA. 121+67 121+88



PROPOSED TYPICAL SECTION
STA. 121+93 - STA. 123+12.70

0 5 10
SCALE: 1"=10'

GENERAL NOTES

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3. FOR TYPICAL SECTION STATIONING REFER TO HORIZONTAL DATA SHEETS AND PROJECT LAYOUT SHEETS.

SHARED PATH KEYED NOTES

FLEXIBLE PAVEMENT:

(A) SPECIAL CURB

(B) 2" HMAC TYPE D

(C) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2

(D) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

(E) 6" x 12" CONCRETE HEADER CURB

RIGID PAVEMENT:

(K) 6" REINFORCED CONCRETE

(L) 5" AGGR. BASE COURSE TY A, GRADE 1 OR 2

(M) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

PAVEMENT WIDENING KEYED NOTES

(F) 6" x 6" THICKENED PAVEMENT EDGE

(G) 2 1/2" HMAC TYPE C

(H) 6" AGGR. BASE COURSE TY A, GRADE 1 OR 2

(J) 8" SCARIFIED/COMPACTED SUBGRADE 98% MIN. PER ASTM D-1557

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

ROADWAY
PROPOSED TYPICAL SECTIONS

SHEET 7 OF 7

FED.RD. DIV.NO:	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		17
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

BASE BID I: ROADWAY SUMMARY

ITEM	132	247	251	310	340	340	432	450	529	529	530	531	531	540	544	1005	ELP1	ELP3
CODE	6009	6041	6034	6014	6050	6122	6026	6051	6003	6036	6010	6004	6013	6001	6001	6003	6001	6001
SHARED USE PATH PLAN	EMBANKMENT (ORIGINAL) (ORD COMP) (TY A)	FL BS (CMP IN PLC) (TYA GR1-2) (FNAL POS)	REWORK BS MTL (TY C) (8") (ORD COMP)	PRIME COAT (SS-1H)	D-GR HMA(SQ) TY-C PG70-22	D-GR HMA(SQ) TY-D PG70-22	RIPRAP (STONE COMMON) (DRY) (18 IN)	RAIL (HANDRAIL) (TY E)	CONC CURB (TY II A)	CONCRETE CURB (SPECIAL)	INTRSCT, DRVWAYS, & TURNOUT (CONC)	CURB RAMPS (TY 1)	CURB RAMPS (TY 10)	MTL W-BEAM GD FEN (TIM POST)	GUARDRAIL END TREATMENT (INSTALL)	LOOSE AGGR FOR GROUNDCOVER (TYPE III)	RAILROAD TRACKS CROSSING IMPROVEMENTS	FIXED BOLLARDS
UNIT	CY	CY	SY	GAL	TON	TON	CY	LF	LF	LF	SY	EA	EA	LF	EA	CY	LS	EA
SHEET 1 OF 14	216	235	1579	790	89	89	-	30	800	800	252	2	3	-	-	-	1	14
SHEET 2 OF 14	277	149	1006	503	51	76	-	-	900	900	63	-	4	-	-	-	-	6
SHEET 3 OF 14	341	859	900	450	9	88	-	-	900	900	50	-	2	-	-	-	-	4
SHEET 4 OF 14	375	162	1161	581	-	108	-	-	1650	250	183	-	-	-	-	-	-	-
SHEET 5 OF 14	616	139	1000	500	-	110	187	50	1650	250	-	-	-	-	-	-	-	-
SHEET 6 OF 14	752	139	1000	500	-	110	-	-	1800	-	-	-	-	-	-	-	-	-
SHEET 7 OF 14	561	139	1000	500	-	110		-	1800	-	-	-	-	-	-	-	-	-
SHEET 8 OF 14	576	139	1000	500	-	110	-	-	1800	-	-	-	-	250	1	-	-	-
SHEET 9 OF 14	710	158	1134	567	-	110	-	-	1800	-	134	-	-	350	1	-	-	3
SHEET 10 OF 14	909	139	1000	500	-	110	-	-	1800	-	-	-	-	-	-	-	-	9
SHEET 11 OF 14	626	139	1000	500	-	110	-	-	1800	-	-	-	-	-	-	-	-	9
SHEET 12 OF 14	738	140	1001	501	-	74	-	-	1800	-	334	-	-	-	-	-	-	9
SHEET 13 OF 14	851	175	1256	628	-	110	-	-	1800	-	256	-	-	-	-	-	-	8
SHEET 14 OF 14	447	98	705	353	-	78	-	-	1300	-	-	-	-	-	-	2	-	2
TOTAL	7996	2810	14742	7373	149	1393	187	80	21600	3100	1272	2	9	600	2	2	1	64

BASE BID I: TRAFFIC CONTROL SUMMARY

ITEM	500	502	662	662	666	666	666	666	666	666	666	666	677	678	678
CODE	6001	6001	6063	6095	6012	6048	6120	6126	6170	6182	6205	6207	6001	6001	6008
TRAFFIC CONTROL PLANS	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING	WK ZN PAV MRK REMOV (W)4"(SLD)	WK ZN PAV MRK REMOV (Y)4"(SLD)	REFL PAV MRK TY I (W)4"(SLD) (100MIL)	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	REFL PAV MRK TY I (Y)4"(BRK) (100MIL)	REFL PAV MRK TY I (Y)4"(SLD) (100MIL)	REFL PAV MRK TY II (W)4" (SLD)	REFL PAV MRK TY II (W)24" (SLD)	REFL PAV MRK TY II (Y)4" (BRK)	REFL PAV MRK TY II (Y)4" (SLD)	ELIM EXT PAV MRK & MRKS (4")	PAV SURF PREP FOR MRK (4")	PAV SURF PREP FOR MRK (24")
UNIT	LS	MO	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF
PHASE 1	1	5	2030	1015	2030	-	260	-	2030	-	260	-	2290	2290	-
PHASE 2	-	2	-	2140	-	-	-	-	-	-	-	-	2140	-	-
PHASE 3	-	3	-	3024	-	-	-	3024	-	-	-	3024	757	3024	-
PHASE 4	-	2	-	120	-	9	-	240	-	9	-	240	240	240	9
TOTAL	1	12	2030	6299	2030	9	260	3264	2030	9	260	3264	5427	5554	9

PAVEMENT MARKING QUANTITIES LISTED IN TRAFFIC CONTROL PLANS REFER TO PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY. PAVEMENT MARKINGS FOR THE SHARED USE PATH ARE FOUND IN THE PLAN SHEETS AND SUMMARIZED IN THE PAVEMENT MARKINGS SECTION.

BASE BID I: REMOVAL SUMMARY

ITEM	100	104	105	110	496	677
CODE	6002	6021	6005	6001	6006	6001
DEMOLITION & GRADING PLAN	PREPARING ROW	REMOVING CONC (CURB)	REMOVING STAB BASE AND ASPH PAV (3")	EXCAVATION (ROADWAY)	REMOV STR (HEADWALL)	ELIM EXT PAV MRK & MRKS (4")
UNIT	STA	LF	SY	CY	EA	LF
SHEET 1 OF 14	9	-	740	-	2	1500
SHEET 2 OF 14	9	-	500	-	-	1000
SHEET 3 OF 14	9	65	400	1350	-	-
SHEET 4 OF 14	9	-	113	-	-	-
SHEET 5 OF 14	9	-	55	-	-	-
SHEET 6 OF 14	9	-	-	-	-	-
SHEET 7 OF 14	9	-	-	-	-	-
SHEET 8 OF 14	9	-	-	-	-	-
SHEET 9 OF 14	9	-	-	-	-	-
SHEET 10 OF 14	9	-	-	-	-	-
SHEET 11 OF 14	9	-	-	-	-	-
SHEET 12 OF 14	9	-	-	-	-	-
SHEET 13 OF 14	9	-	-	-	-	-
SHEET 14 OF 14	6	-	-	-	-	-
TOTAL	123	65	1808	1350	2	2500

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

QUANTITY SUMMARY SHEETS

SHEET 1 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	18

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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BASE BID I: PAVEMENT MARKINGS SUMMARY

ITEM	658	666	666	666	666	666	666	678	678
CODE	6007	6042	6048	6180	6182	6205	6207	6006	6008
SHARED USE PATH PLAN	INSTL DEL ASSM (D-SW) SZ1 (FLX) GF2	REFL PAV MRK TY I (W) 12"(SLD) (100MIL)	REFL PAV MRK TY I (W) 24"(SLD) (100MIL)	REFL PAV MRK TY II (W) 12" (SLD)	REFL PAV MRK TY II (W) 24" (SLD)	REFL PAV MRK TY II (Y) 4" (BRK)	REFL PAV MRK TY II (Y) 4" (SLD)	PAV SURF PREP FOR MRK (12")	PAV SURF PREP FOR MRK (24")
UNIT	EA	LF	LF	LF	LF	LF	LF	LF	LF
SHEET 1 OF 14	-	60	24	60	24	156	110	60	24
SHEET 2 OF 14	-	120	22	120	22	192	-	120	22
SHEET 3 OF 14	-	60	11	60	11	186	66	60	11
SHEET 4 OF 14	-	-	-	-	-	168	214	-	-
SHEET 5 OF 14	-	-	-	-	-	165	266	-	-
SHEET 6 OF 14	-	-	-	-	-	225	-	-	-
SHEET 7 OF 14	-	-	-	-	-	225	-	-	-
SHEET 8 OF 14	40	-	-	-	-	180	192	-	-
SHEET 9 OF 14	56	-	-	-	-	216	59	-	-
SHEET 10 OF 14	-	-	-	-	-	225	-	-	-
SHEET 11 OF 14	-	-	-	-	-	225	-	-	-
SHEET 12 OF 14	-	-	-	-	-	225	-	-	-
SHEET 13 OF 14	-	-	-	-	-	186	162	-	-
SHEET 14 OF 14	-	-	-	-	-	102	65	-	-
TOTAL	96	240	57	240	57	2676	1134	240	57

PAVEMENT MARKINGS SUMMARIZED REFER TO PAVEMENT MARKINGS ALONG THE SHARED USE PATH AND CROSS WALKS. PAVEMENT MARKINGS ALONG OT SMITH ROAD ROADWAY ARE LISTED AND SUMMARIZED IN THE TRAFFIC CONTROL PLAN SHEETS.

BASE BID I: STORMWATER POLLUTION PREVENTION PLAN SUMMARY

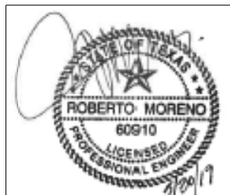
ITEM	506	506	506	506	506	506
CODE	6020	6024	6038	6039	6042	6043
STORMWATER POLLUTION PREVENTION PLAN	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL)(18")	BIODEG EROSN CONT LOGS (REMOVE)
UNIT	SY	SY	LF	LF	LF	LF
SHEET 1 OF 14	334	334	700	700	211	211
SHEET 2 OF 14	334	334	1192	1192		
SHEET 3 OF 14	223	223	676	676	162	162
SHEET 4 OF 14	-	-	895	895	29	29
SHEET 5 OF 14	112	112	860	860	-	-
SHEET 6 OF 14	-	-	900	900	-	-
SHEET 7 OF 14	112	112	900	900	-	-
SHEET 8 OF 14	-	-	900	900	-	-
SHEET 9 OF 14	112	112	1492	1492	-	-
SHEET 10 OF 14	-	-	1716	1716	84	84
SHEET 11 OF 14	-	-	1800	1800	-	-
SHEET 12 OF 14	-	-	1664	1664	-	-
SHEET 13 OF 14	112	112	985	985	-	-
SHEET 14 OF 14	112	112	725	725	-	-
TOTAL	1451	1451	15405	15405	486	486

BASE BID I: SIGNING SUMMARY

ITEM	644
CODE	6001
SHARED USE PATH PLAN	IN SM RD SN SUP&AM TY10BWG(1) SA(P)
UNIT	EA
SHEET 1 OF 14	8
SHEET 2 OF 14	10
SHEET 3 OF 14	6
SHEET 4 OF 14	3
SHEET 5 OF 14	1
SHEET 6 OF 14	1
SHEET 7 OF 14	1
SHEET 8 OF 14	1
SHEET 9 OF 14	2
SHEET 10 OF 14	2
SHEET 11 OF 14	2
SHEET 12 OF 14	2
SHEET 13 OF 14	2
SHEET 14 OF 14	4
TOTAL	45

BASE BID I: DRAINAGE SUMMARY

ITEM	432	460	460	466	466
CODE	6001	6003	6004	6097	6132
SHARED USE PATH PLAN	RIPRAP (CONC) (4 IN)	CMP (GAL STL 24 IN)	CMP (GAL STL 30 IN)	HEADWALL (CH-PW-O) (DIA=24 IN)	HEADWALL (CH-PW-S) (DIA=30 IN)
UNIT	CY	LF	LF	EA	EA
SHEET 1 OF 14	2	8	15	1	1
SHEET 2 OF 14	-	-	-	-	-
SHEET 3 OF 14	-	-	-	-	-
SHEET 4 OF 14	-	-	-	-	-
SHEET 5 OF 14	-	-	-	-	-
SHEET 6 OF 14	-	-	-	-	-
SHEET 7 OF 14	-	-	-	-	-
SHEET 8 OF 14	-	-	-	-	-
SHEET 9 OF 14	-	-	-	-	-
SHEET 10 OF 14	-	-	-	-	-
SHEET 11 OF 14	-	-	-	-	-
SHEET 12 OF 14	-	-	-	-	-
SHEET 13 OF 14	-	-	-	-	-
SHEET 14 OF 14	-	-	-	-	-
TOTAL	2	8	15	1	1



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Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

QUANTITY SUMMARY SHEETS

SHEET 2 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		19
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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BASE BID II: LANDSCAPING SUMMARY

ITEM	161	162	164	170	192	192	192	192	193	1002	1002	1002	1002	1002	1005	1005
CODE	6012	6003	6033	6001	6009	6010	6021	6044	6001	6002	6003	6004	6005	6006	6001	6002
AESTHETIC PLAN	GENERAL USE COMPOST	STRAW OR HAY MULCH	DRILL SEEDING (PERM) (RURAL) (SANDY)	IRRIGATION SYSTEM	PLANT MATERIAL (GROUP I) (OCOTILLO)	PLANT MATERIAL (GROUP II) (YUCCA, BEAR GRASS, AGAVE)	PLANT MATERIAL (5 GAL) (TREE)	PLANT MATERIAL (MIN 2" CAL) (B&B)	PLANT MAINTENANCE	LANDSCAPE AMENITY (TY 1) (BOULDER)	LANDSCAPE AMENITY (TY 2) (BENCH)	LANDSCAPE AMENITY (TY 3) (TRASH RECEPTACLE)	LANDSCAPE AMENITY (TY 4) (MUTT MITT DISPENSER)	LANDSCAPE AMENITY (TY 5) (MILE MARKER)	LOOSE AGGR FOR GROUNDCOVER (TYPE I) (1.25" FRANKLIN RED ROCK)	LOOSE AGGR FOR GROUNDCOVER (TYPE II) (COBBLE)
UNIT	CY	SY	SY	LS	EA	EA	EA	EA	MO	EA	EA	EA	EA	EA	CY	CY
TOTAL	1	21534	21534	1	122	191	4	20	3	513	13	11	6	7	911	206

BASE BID I: ILLUMINATION SUMMARY

ITEM	110	416	ELP2
CODE	6003	6002	6001
ILLUMINATION PLAN	EXCAVATION (SPECIAL)	DRILL SHAFT (24 IN)	PED ILLUMINATION ASSEMBLY (10') (SOLAR LED)
UNIT	CY	LF	EA
SHEET 1 OF 6	-	-	-
SHEET 2 OF 6	2	84	14
SHEET 3 OF 6	3	132	22
SHEET 4 OF 6	3	132	22
SHEET 5 OF 6	2	120	20
SHEET 6 OF 6	2	84	14
			*5
TOTAL	12	552	97

*ADDITIONAL PEDESTRIAN ILLUMINATION ASSEMBLIES AS DIRECTED BY THE EL PASO COUNTY. CONTRACTOR TO COORDINATE WITH EL PASO COUNTY FOR LOCATION OF STORAGE FOR THESE EXTRA ASSEMBLIES.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

QUANTITY SUMMARY SHEETS

SHEET 3 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		20
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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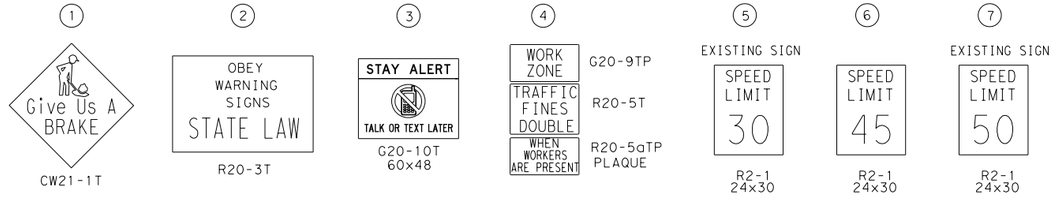

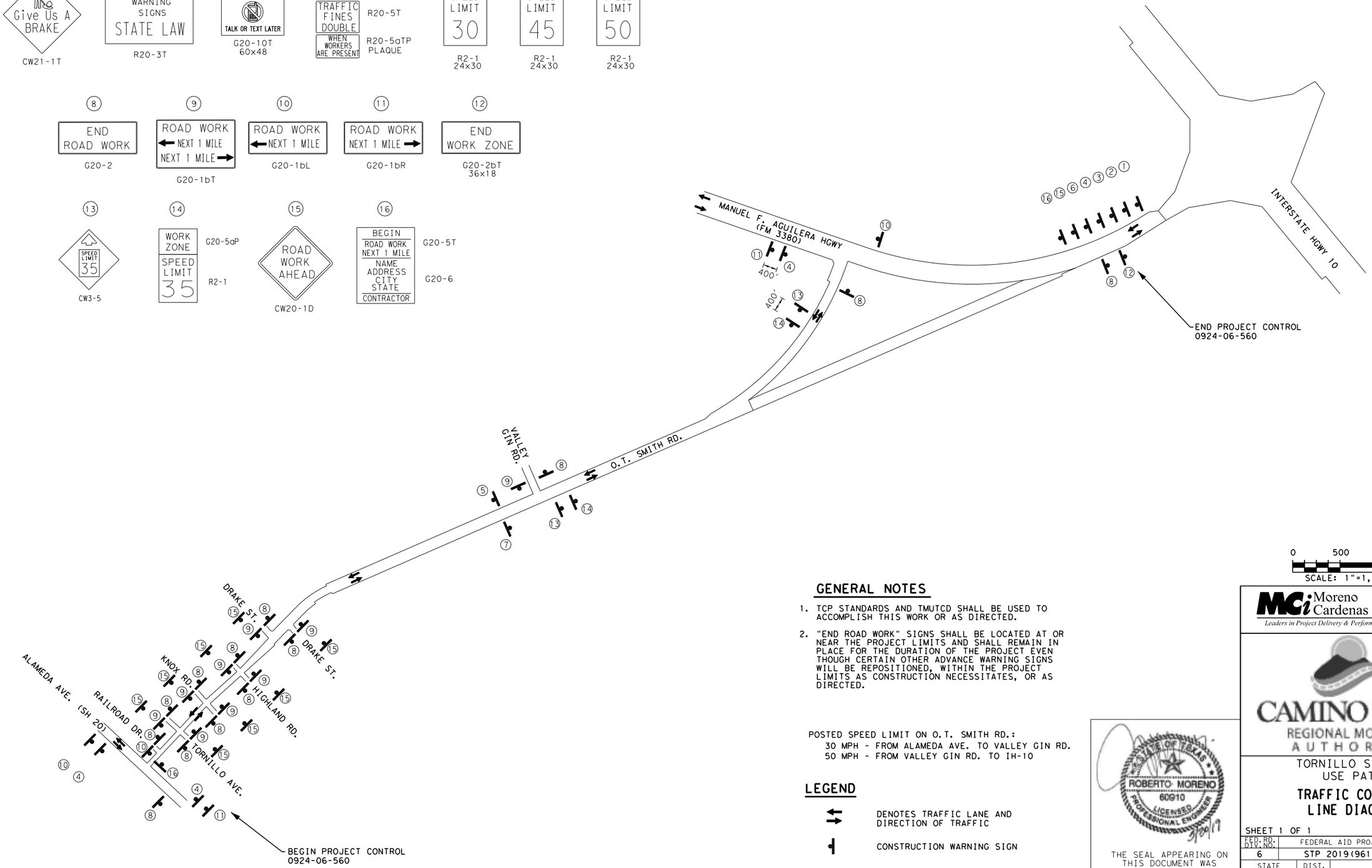

0 500 1,000
SCALE: 1"=1,000'

GENERAL NOTES

1. TCP STANDARDS AND TMUTCD SHALL BE USED TO ACCOMPLISH THIS WORK OR AS DIRECTED.
2. "END ROAD WORK" SIGNS SHALL BE LOCATED AT OR NEAR THE PROJECT LIMITS AND SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT EVEN THOUGH CERTAIN OTHER ADVANCE WARNING SIGNS WILL BE REPOSITIONED, WITHIN THE PROJECT LIMITS AS CONSTRUCTION NECESSITATES, OR AS DIRECTED.

POSTED SPEED LIMIT ON O.T. SMITH RD.:
30 MPH - FROM ALAMEDA AVE. TO VALLEY GIN RD.
50 MPH - FROM VALLEY GIN RD. TO IH-10

LEGEND

DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC

CONSTRUCTION WARNING SIGN

STATE OF TEXAS
ROBERTO MORENO
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CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL LINE DIAGRAM

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		21
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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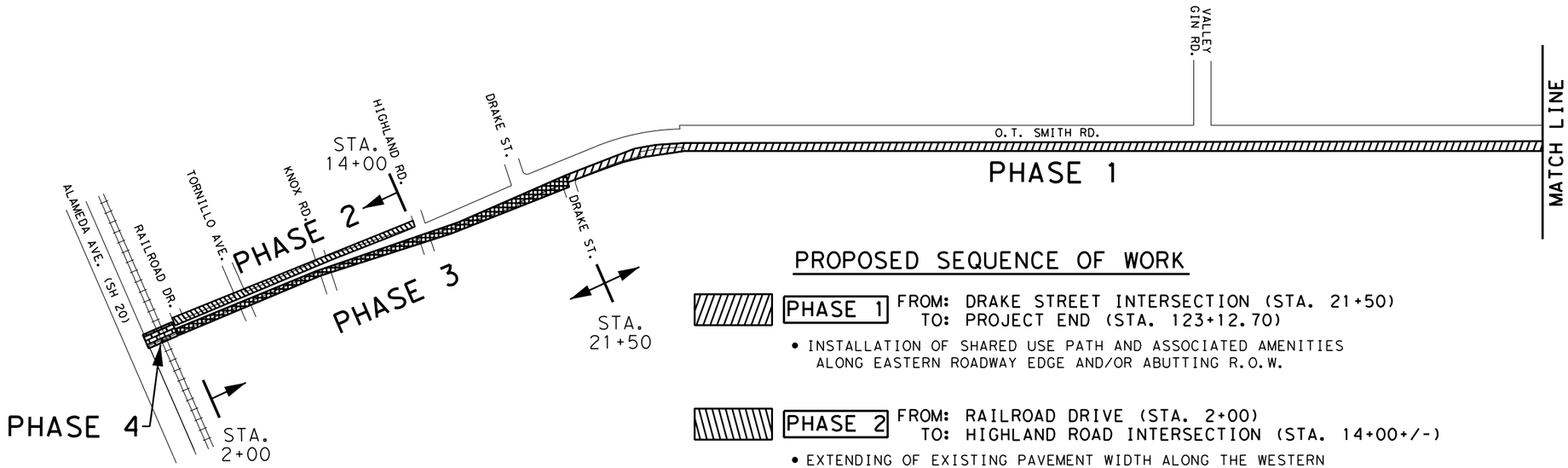


PROPOSED SEQUENCE OF WORK

PHASE 1 FROM: DRAKE STREET INTERSECTION (STA. 21+50)
TO: PROJECT END (STA. 123+12.70)

- INSTALLATION OF SHARED USE PATH AND ASSOCIATED AMENITIES ALONG EASTERN ROADWAY EDGE AND/OR ABUTTING R.O.W.

PHASE 2 FROM: RAILROAD DRIVE (STA. 2+00)
TO: HIGHLAND ROAD INTERSECTION (STA. 14+00+/-)

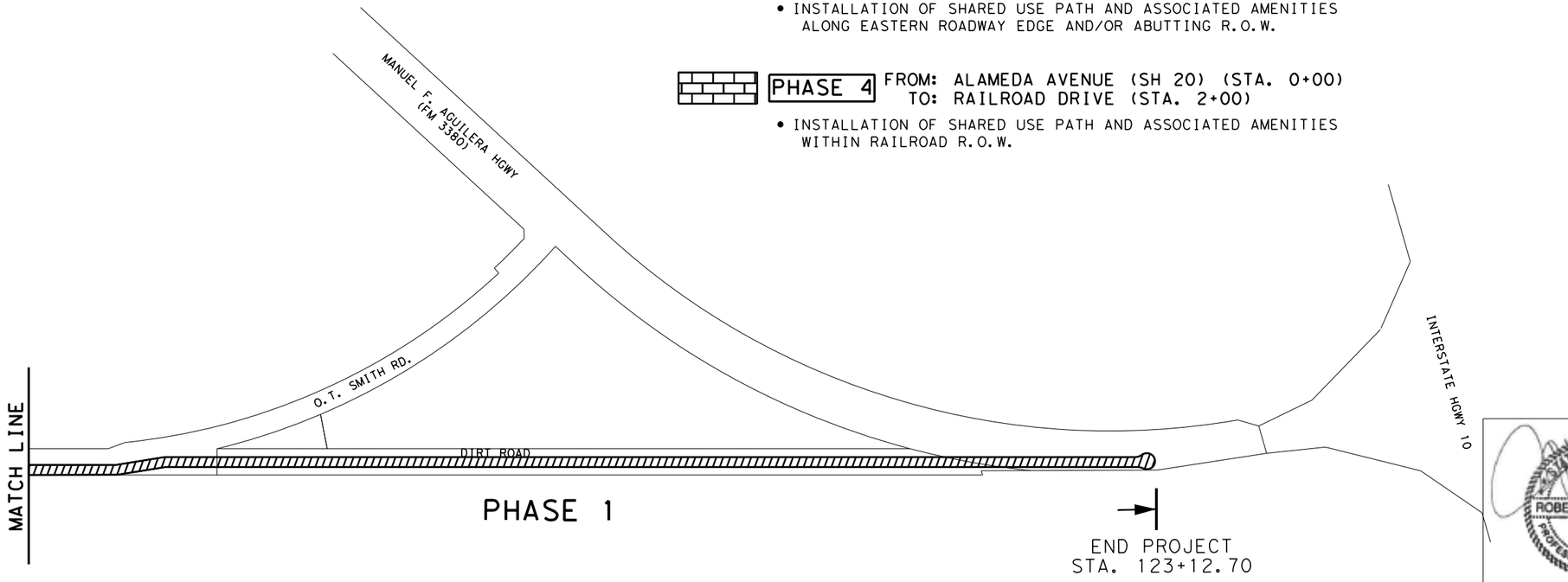
- EXTENDING OF EXISTING PAVEMENT WIDTH ALONG THE WESTERN ROADWAY EDGE BY PLACEMENT OF NEW ASPHALT PAVEMENT (WIDTH VARIES).

PHASE 3 FROM: RAILROAD DRIVE (STA. 2+00)
TO: DRAKE STREET INTERSECTION (STA. 21+50)

- INSTALLATION OF SHARED USE PATH AND ASSOCIATED AMENITIES ALONG EASTERN ROADWAY EDGE AND/OR ABUTTING R.O.W.

PHASE 4 FROM: ALAMEDA AVENUE (SH 20) (STA. 0+00)
TO: RAILROAD DRIVE (STA. 2+00)

- INSTALLATION OF SHARED USE PATH AND ASSOCIATED AMENITIES WITHIN RAILROAD R.O.W.



GENERAL NOTES

1. ENGINEER MUST APPROVE CHANGES TO THE SEQUENCE OF CONSTRUCTION.
2. ENGINEER MUST APPROVE WORKING ON MORE THAN ONE PHASE AT A TIME.
3. WORK IN RAILROAD R.O.W. SHALL BE COORDINATED IN ADVANCE WITH RAILROAD COMPANY.
4. VEHICULAR ACCESS TO SIDE STREET RESIDENTS TO BE MAINTAINED AT ALL TIMES.

0 300 600
SCALE: 1"=600'

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CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL CONSTRUCTION SEQUENCE

SHEET 1 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		22
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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TORNILLO SHARED USE PATH (CSJ 0924-06-560)
TCP SELECTION TABLE

LOCATION	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
O.T. SMITH ROAD	INSTALLATION OF SHARED USE PATH AND ASSOCIATED AMENITIES ALONG EASTERN ROADWAY EDGE AND/OR ABUTTING ROW. WIDENING OF EXISTING PAVEMENT WIDTH ALONG THE ROADWAY EDGE BY PLACEMENT OF NEW ASPHALT PAVEMENT (WIDTH VARIES)	BC(1)-14	GENERAL NOTES AND REQUIREMENTS	NA	GENERAL REQUIREMENTS AND INSTRUCTIONS OF USE OF TCP STANDARD SHEETS; PHASE 1-4
		BC(2)-14	PROJECT LIMIT	NA	PLACE SIGNS WITH APPROPRIATE SIZES AND DISTANCES INDICATING PROJECT LIMITS; PHASE 1-4
		BC(3)-14	WORK ZONE SPEED LIMIT	NA	ESTABLISH WORK ZONE SPEED LIMIT AND DETERMINE FREQUENCY AND DISTANCE BETWEEN SIGNS; PHASE 1-4
		BC(4)-14	TEMPORARY SIGN NOTES	NA	REVIEW FOR SIGN PLACEMENT; PHASE 1-4
		BC(5)-14	TYPICAL SIGN SUPPORT	NA	REVIEW FOR SIGN PLACEMENT; PHASE 1-4
		BC(6)-14	PORTABLE CHANGEABLE MESSAGE SIGN	NA	SIGN TO BE USED TO SHOW CURRENT INFORMATION ABOUT WORK ZONE CONSTRUCTION OR LANE CLOSURES; PHASE 1-4
		BC(7)-14	ARROW PANEL, REFLECTORS, WARNING LIGHTS, & ATTENUATOR	NA	FOR ALL LANE CLOSURES REQUIRING THE USE OF FLASHING ARROW BOARDS; PHASE 1-4
		BC(8)-14	CHANNELIZING DEVICES	NA	CHANNELIZED DEVICES TO BE USED FOR STATIONARY WORK ZONES DURING PATH AND PAVEMENT WIDENING CONSTRUCTION; PHASE 1-4
		BC(9)-14	CHANNELIZING DEVICES	NA	OPPOSING TRAFFIC LANE DIVIDERS TO BE USED ALONG WORK ZONE DURING PATH AND PAVEMENT WIDENING CONSTRUCTION AND AT INTERSECTION OF OT SMITH AND ALAMEDA INDICATING TWO-WAY TRAFFIC; PHASE 1-4
		BC(10)-14	CHANNELIZING DEVICES	NA	CONES MAY BE USED AS CHANNELIZED DEVICES ALONG WORK ZONE DURING PATH AND PAVEMENT WIDENING CONSTRUCTION; PHASE 1-4
		BC(11)-14	PAVEMENT MARKINGS	NA	REMOVAL AND PLACEMENT OF PAVEMENT MARKINGS ALONG ROADWAY ON NEW ASPHALT PAVEMENT; PHASE 1-4
		BC(12)-14	PAVEMENT MARKING PATTERNS	NA	RECOMMENDED STRIPING CONFIGURATION FOR PROPOSED PAVEMENT; PHASE 1-4
		TCP(1-1)-18	CONVENTIONAL ROAD SHOULDER WORK	TCP (1-1b)	TO BE USED DURING PAVEMENT WIDENING AND PATH CONSTRUCTION - SHORT TERM DURATION; FOR CONSTRUCTION FROM STA 4+50 TO STA 12+50, STA 21+50 TO STA 29+00, STA 37+00 TO STA 39+00; PHASE 1-2
		TCP(1-2)-18	ONE-LANE TWO-WAY TRAFFIC CONTROL	TCP (1-2b)	FLAGGERS TO BE USED FOR LANE CLOSURE DURING PAVEMENT WIDENING, STREET CROSSING PAVEMENT REPLACEMENT, MATERIAL DELIVERIES, AND OTHER SHORT TERM OPERATIONS; FOR CONSTRUCTION FROM STA 0+00 TO STA 21+50, PHASE 2-4
		TCP(1-3)-18	TRAFFIC SHIFTS ON TWO LANE ROADS	TCP (1-3a)	LANE CLOSURE DURING PAVEMENT WIDENING AND PATH CONSTRUCTION FOR SHORT TERM DURATION TO BE USED IF ADDITIONAL SPACE IS NEEDED THROUGHOUT PHASE 1-4
		WZ(STPM)-13	SHORT TERM PAVEMENT MARKINGS	NA	PAVEMENT WIDENING WILL REQUIRE REMOVAL AND PLACEMENT OF PAVEMENT MARKINGS INCLUDING DOUBLE NO-PASSING LINE AND SINGLE NO-PASSING LINE; PHASE 1-3
		WZ(BRK)-13	"GIVE US A BRAKE" SIGNS	UNDIVIDED HIGHWAY	BEFORE AND THROUGHOUT PROJECT LIMITS INCLUDE SIGNS FOR AN UNDIVIDED HIGHWAY; PHASE 1

STATE OF TEXAS
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Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL CONSTRUCTION SEQUENCE

SHEET 2 OF 24

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		23
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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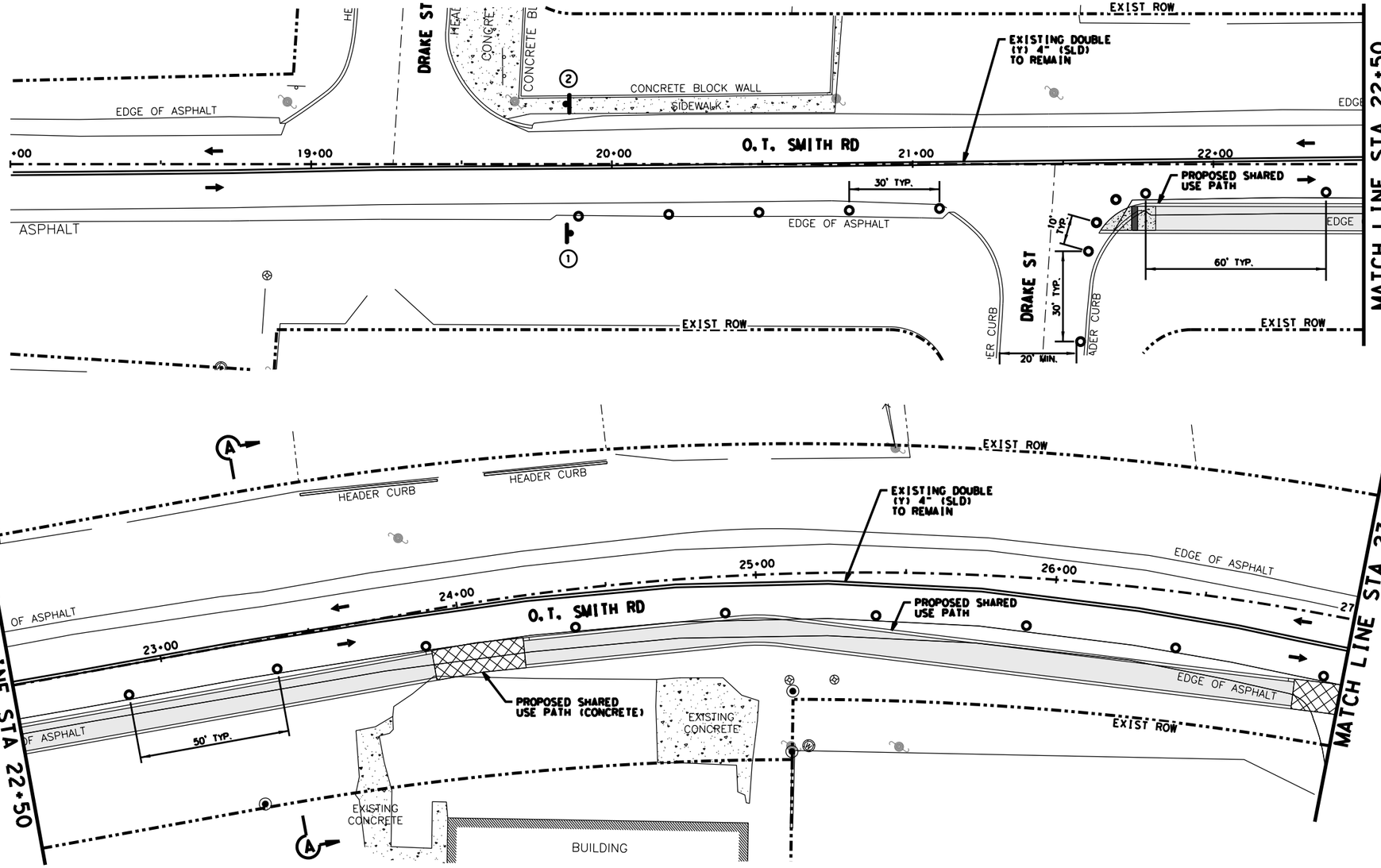
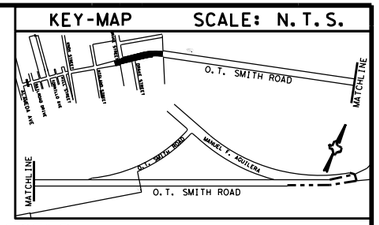




LEGEND

- BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

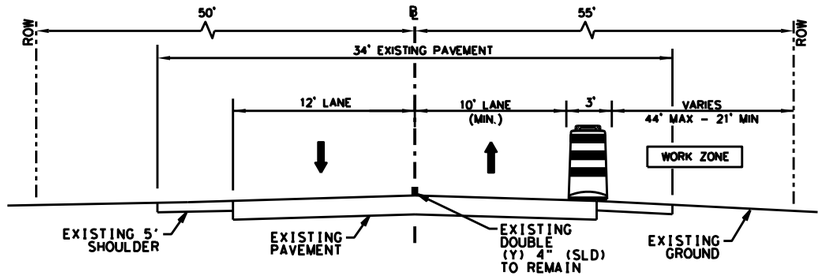
SIGN KEY

① ROAD WORK AHEAD — CW20-1D

② END ROAD WORK — G20-2a or 2b

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	5



TCP SECTION A-A

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STATE OF TEXAS — ROBERTO MORENO — 60910 — LICENSED PROFESSIONAL ENGINEER — 5/30/19

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

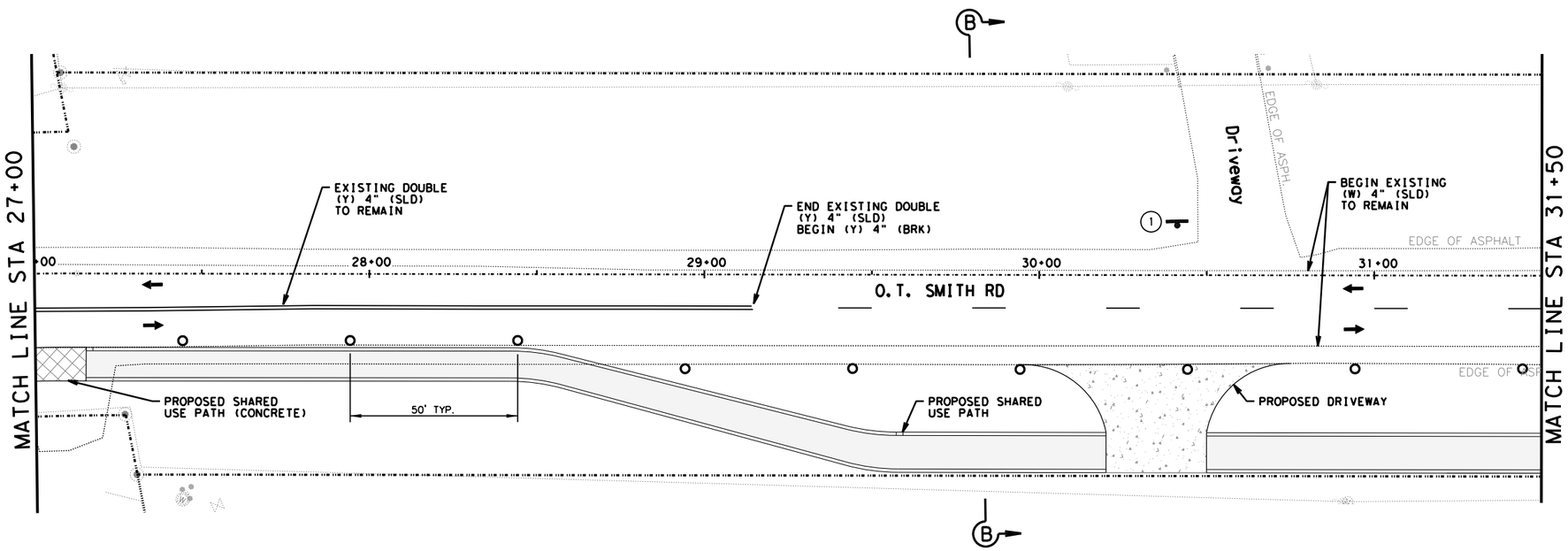
TRAFFIC CONTROL - PHASE 1

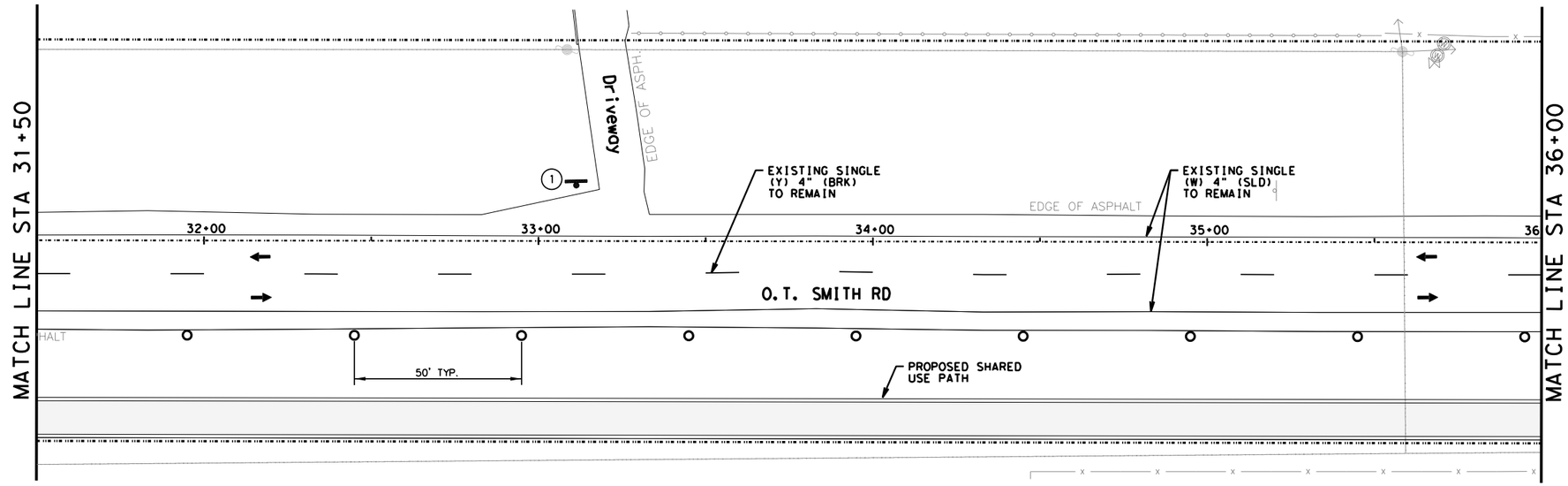
STA 18+00 TO STA 27+00

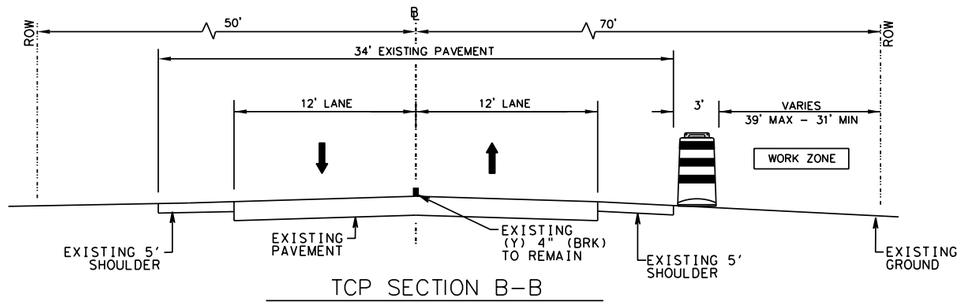
SHEET 1 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		24
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

$USERNAME$ $TIME$ $DATE$ $FILE$

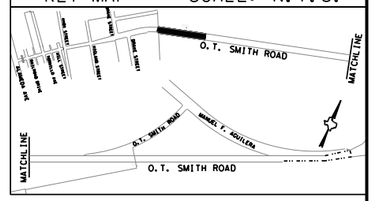






TCP SECTION B–B

KEY-MAP SCALE: N.T.S.



LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SIGN KEY

① ROAD WORK AHEAD — CW20-1D

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 27+00 TO STA 36+00

SHEET 2 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		25
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 5:10:39 PM aurora

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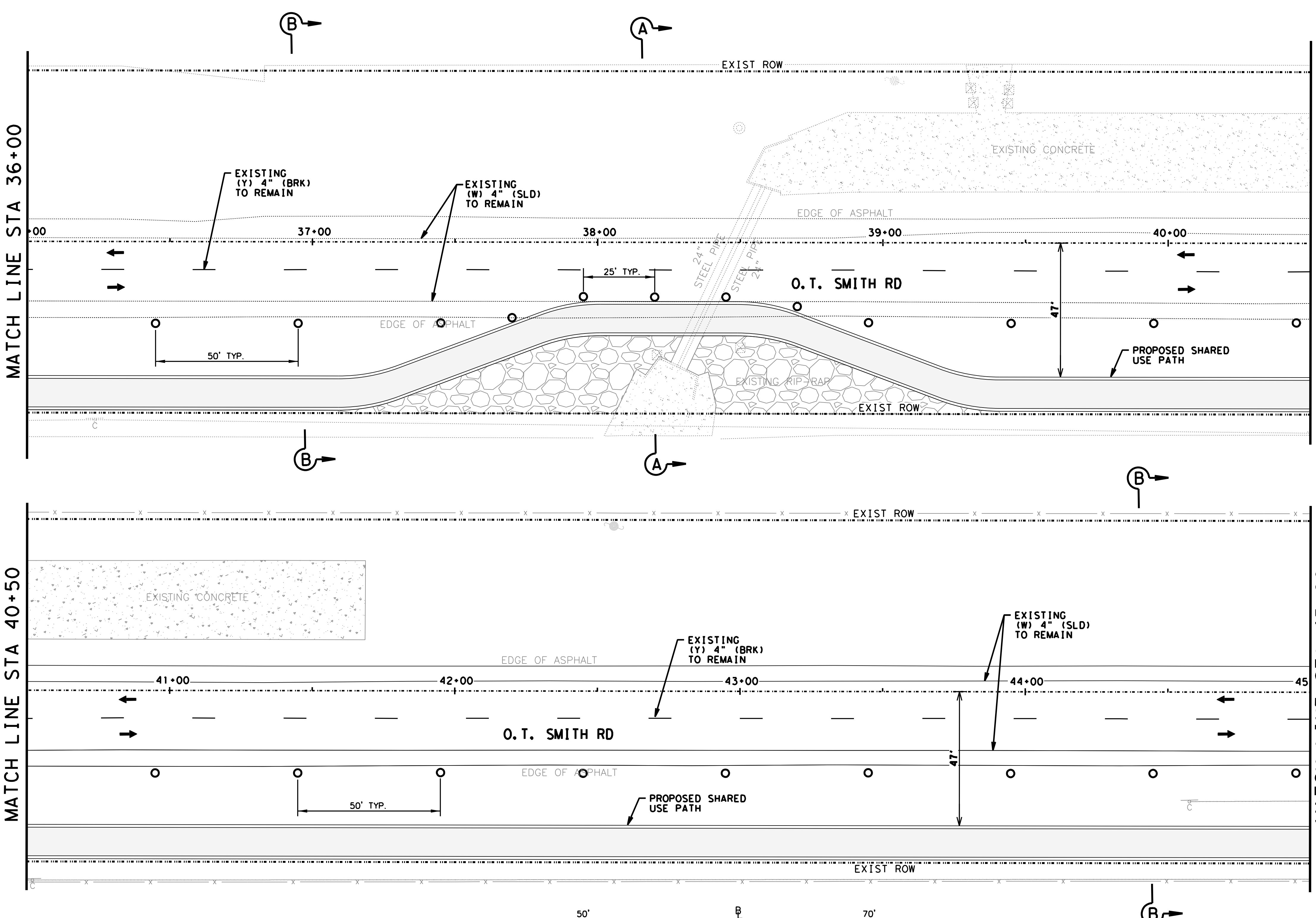
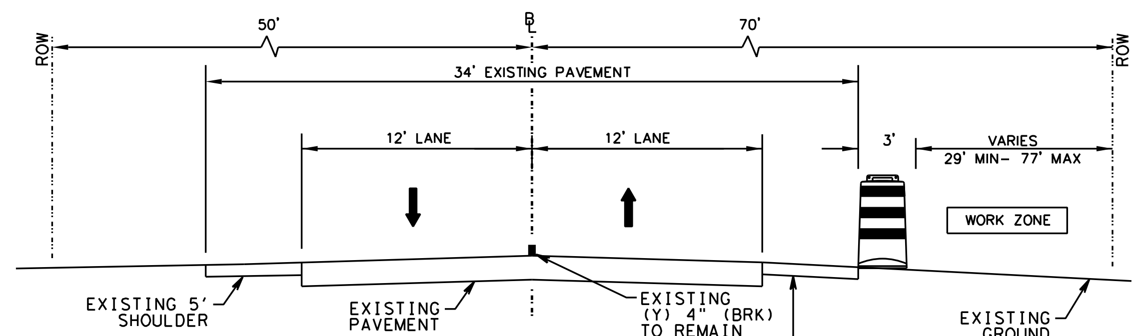


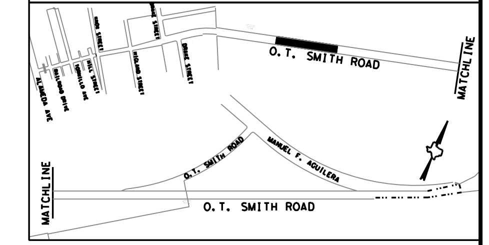


TCP SECTION B-B

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

KEY-MAP SCALE: N.T.S.



LEGEND

- 20+00 — BASELINE
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 36+00 TO STA 45+00

SHEET 3 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		26
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 5:11:41 PM aurora

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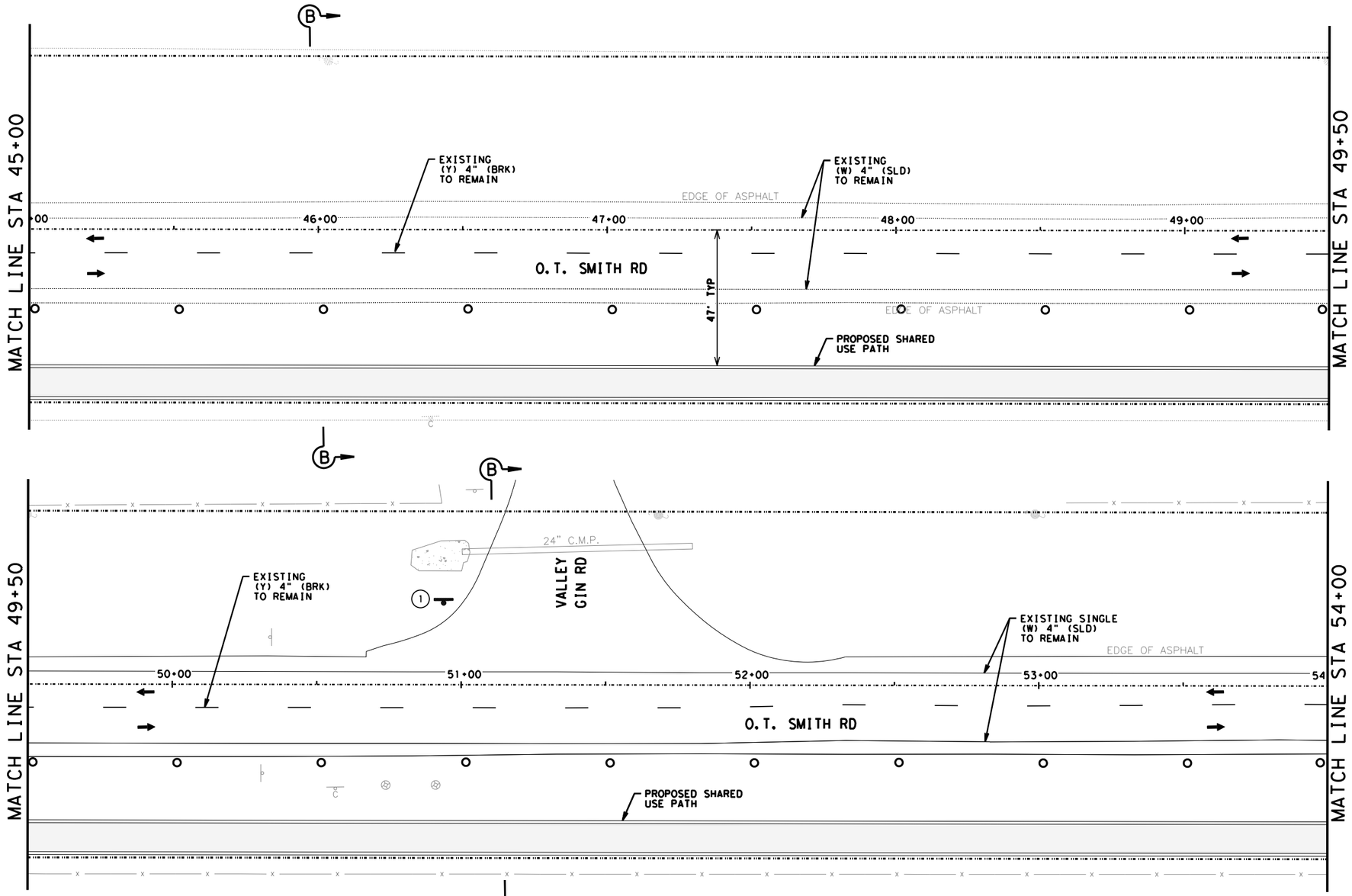
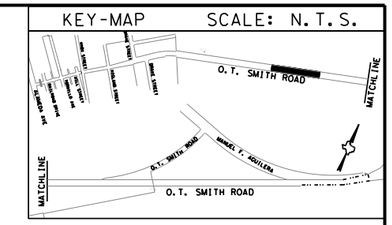




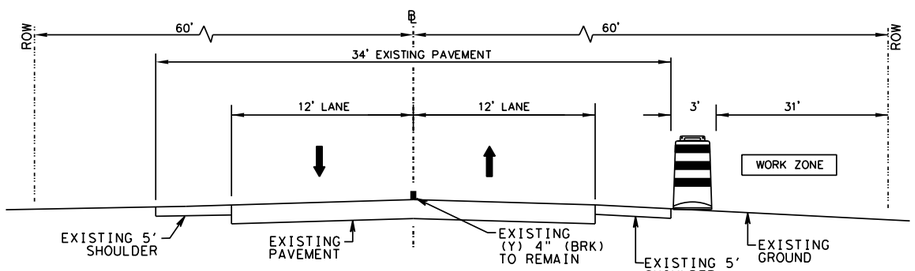
LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'



TCP SECTION B-B

SIGN KEY

① ROAD WORK AHEAD — CW20-1D

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 45+00 TO STA 54+00

SHEET 4 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		27
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 5:12:19 PM aurora

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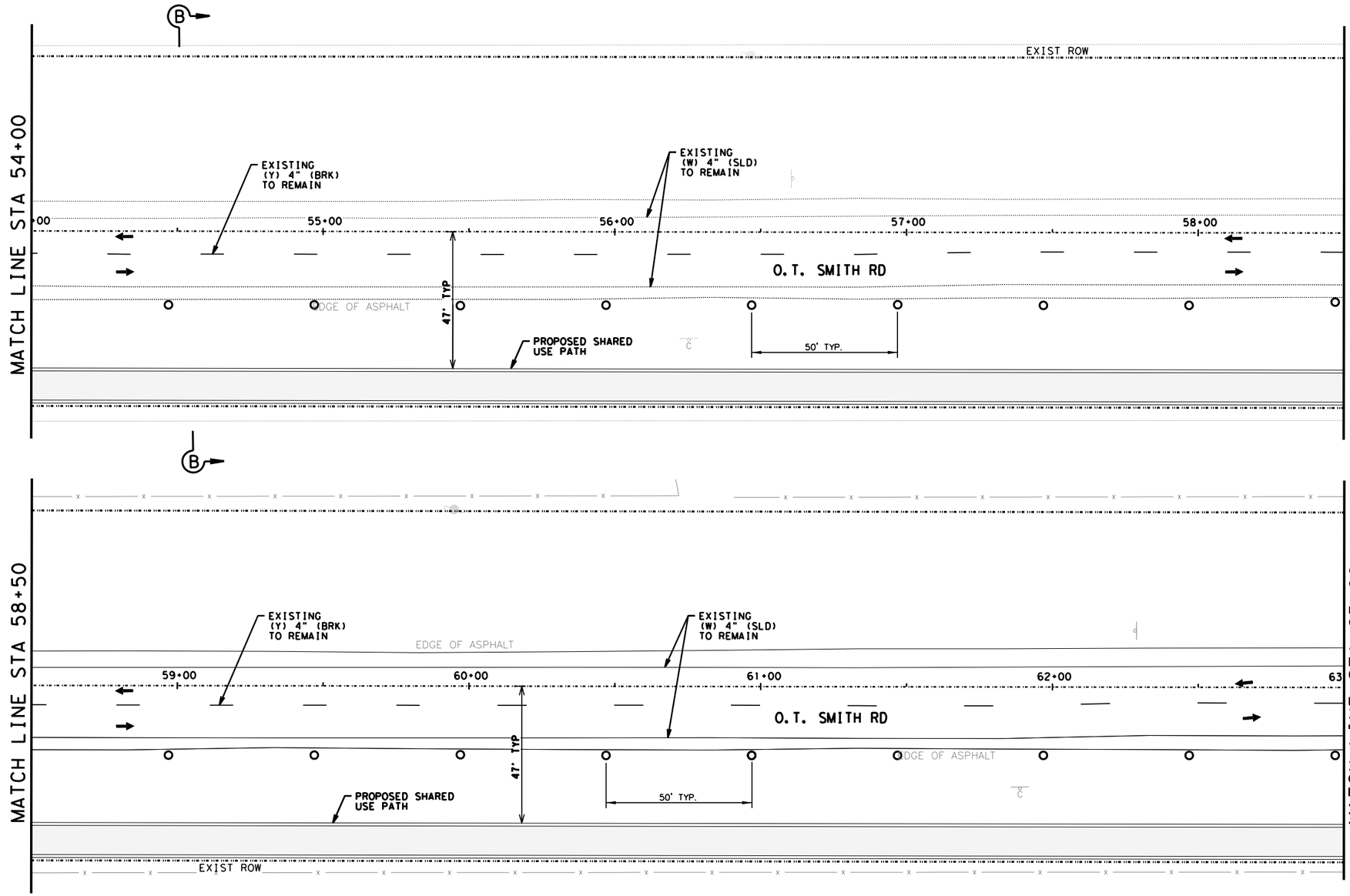
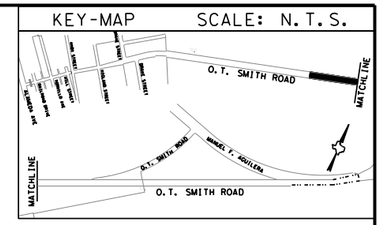




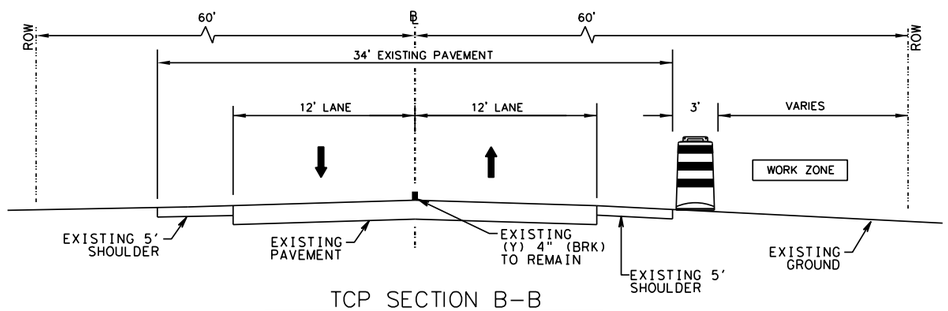
LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-07 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'



TCP SECTION B–B

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 54+00 TO STA 63+00

SHEET 5 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		28
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 5:13:12 PM aurora

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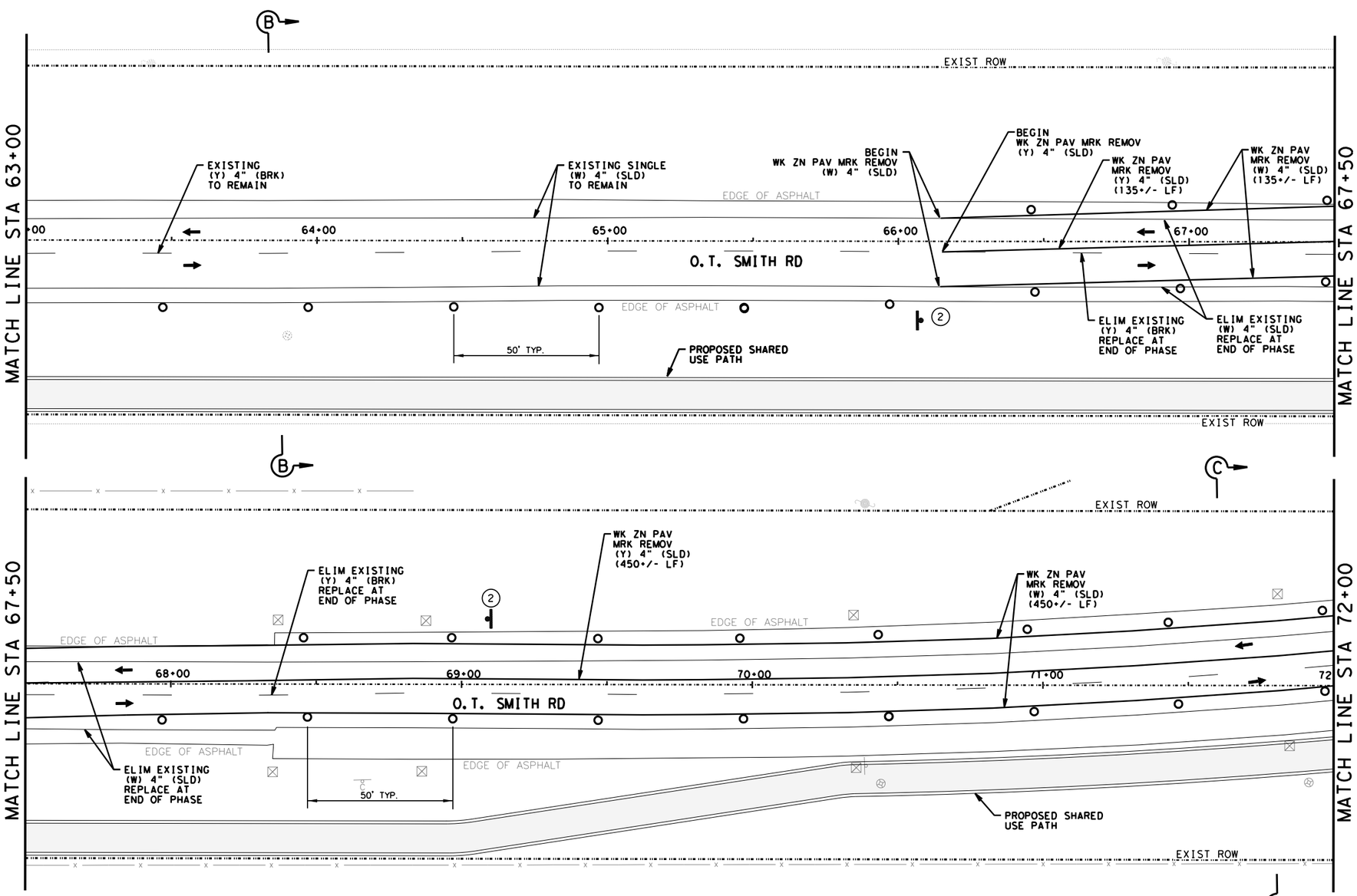

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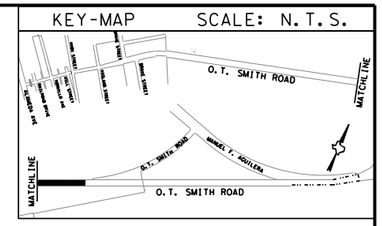

LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

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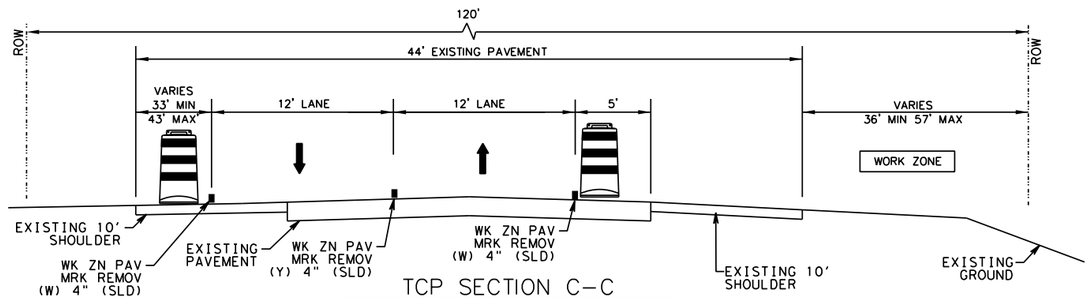
SCALE: 1"=40'

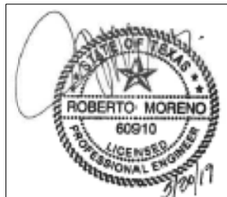


TCP SECTION C-C

SIGN KEY

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
662	6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1170
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	585
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1320
666	6120	REFL PAV MRK TY I (Y)4"(BRK)(100MIL)	LF	150
666	6205	REFL PAV MRK TY II (Y)4"(BRK)	LF	150
666	6012	REFL PAV MRK TY I (W)4"(SLD)(100MIL)	LF	1170
666	6170	REFL PAV MRK TY II (W)4"(SLD)	LF	1170
678	6001	PAV SURF PREP FOR MRK (4")	LF	1320



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 63+00 TO STA 72+00

SHEET 6 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		29
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 5:14:10 PM aurora

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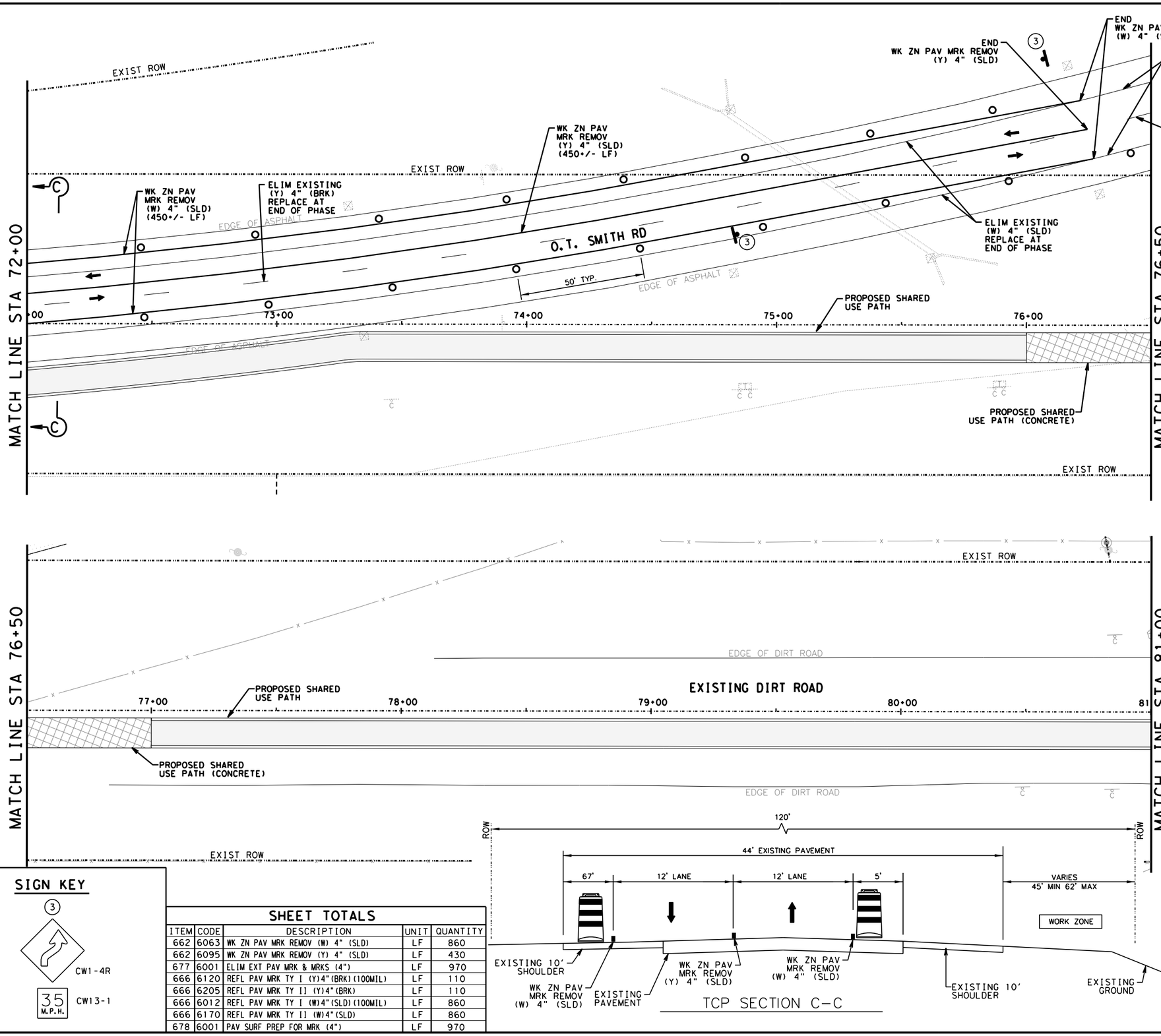

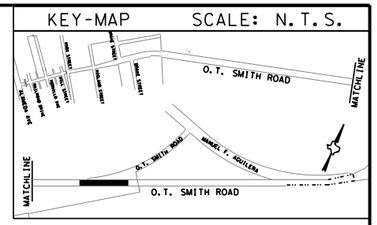

LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SIGN KEY

(3) CW1-4R

35 M.P.H. CW13-1

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
662	6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	860
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	430
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	970
666	6120	REFL PAV MRK TY I (Y)4"(BRK)(100MIL)	LF	110
666	6205	REFL PAV MRK TY II (Y)4"(BRK)	LF	110
666	6012	REFL PAV MRK TY I (W)4"(SLD)(100MIL)	LF	860
666	6170	REFL PAV MRK TY II (W)4"(SLD)	LF	860
678	6001	PAV SURF PREP FOR MRK (4")	LF	970

TCP SECTION C–C

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 72+00 TO STA 81+00

SHEET 7 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		30
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 5:14:59 PM aurora

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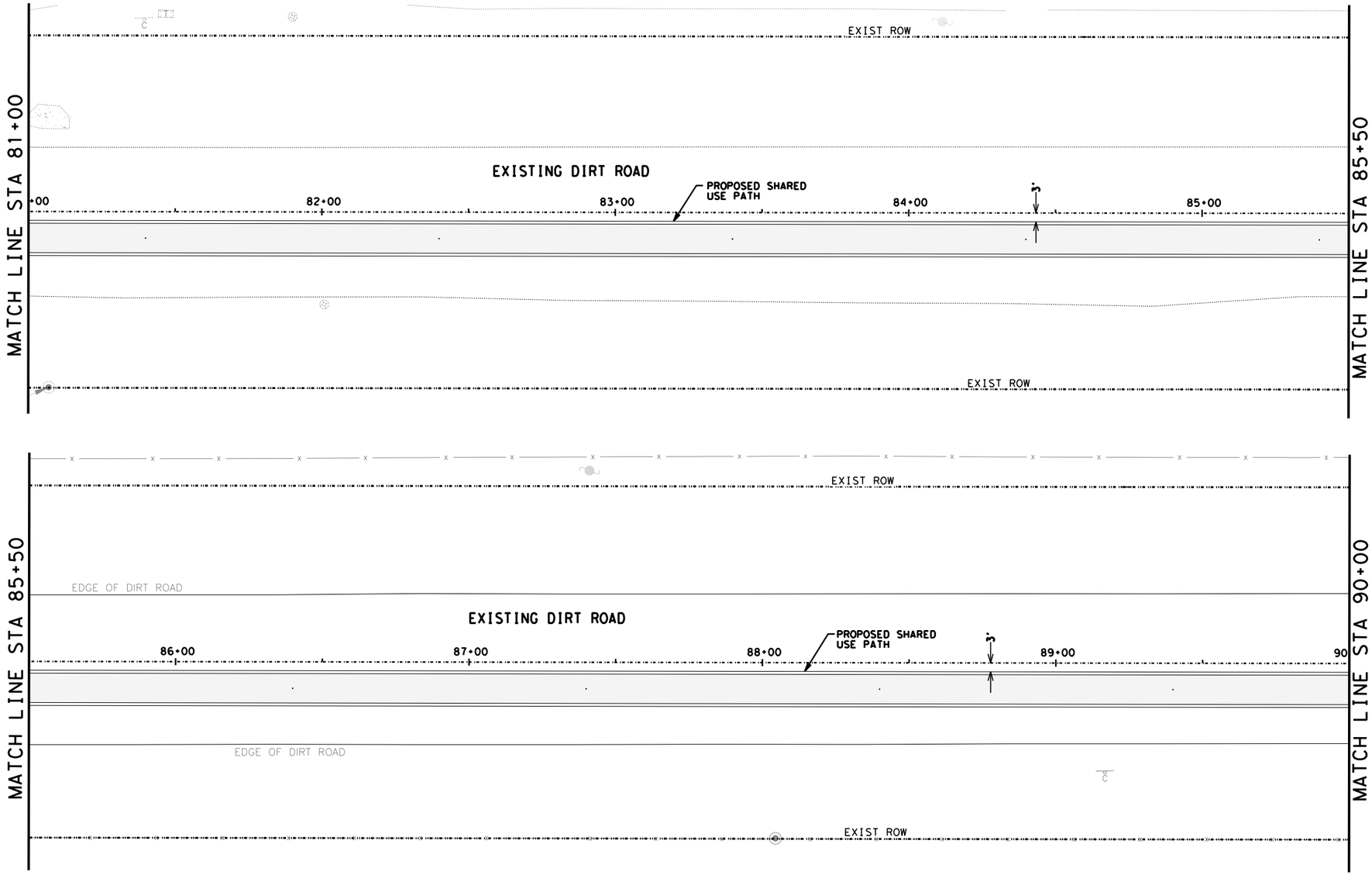
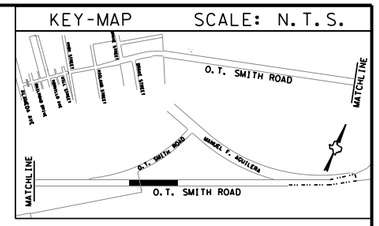


KEY-MAP SCALE: N.T.S.



LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
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5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 81+00 TO STA 90+00

SHEET 8 OF 12

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		31
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/30/2019 12:20:27 PM aurora

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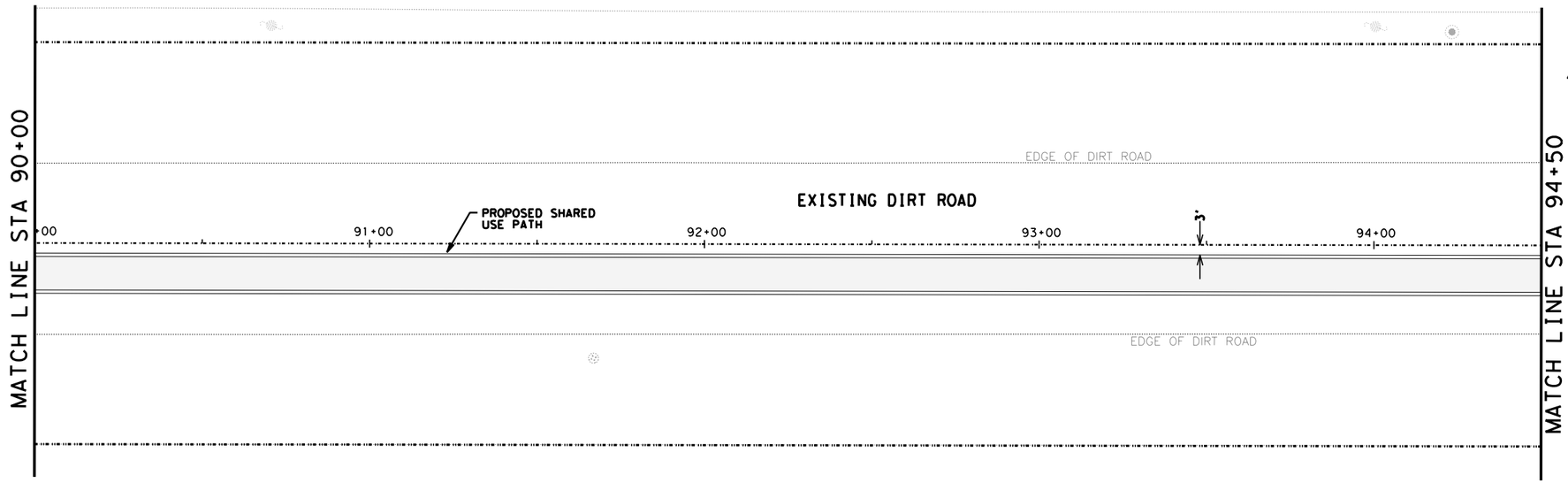

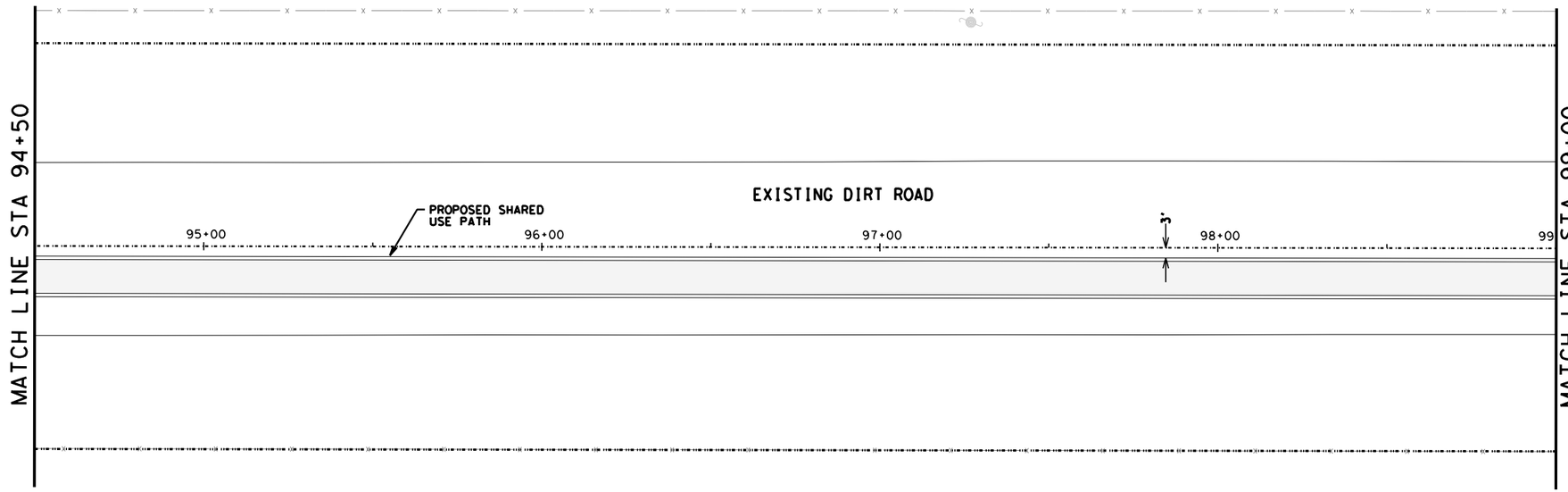

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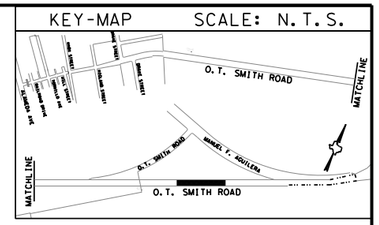

LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SHEET TOTALS				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 90+00 TO STA 99+00

SHEET 9 OF 12

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		32
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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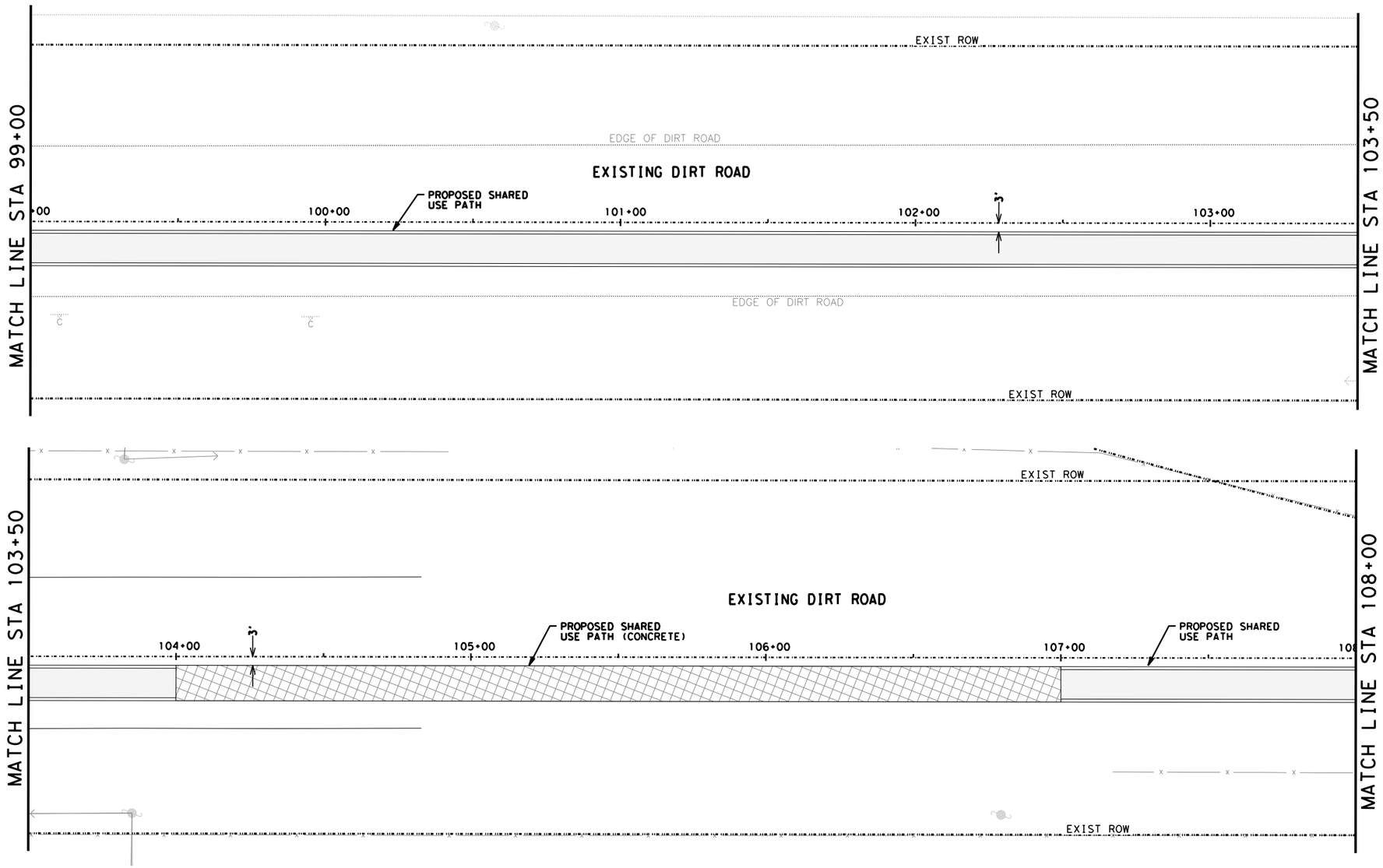

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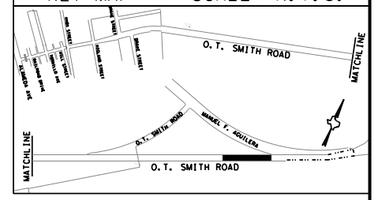

LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
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4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

STATE OF TEXAS · ROBERTO MORENO · 60910 · LICENSED PROFESSIONAL ENGINEER · 5/30/19

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 99+00 TO STA 108+00

SHEET 10 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	33

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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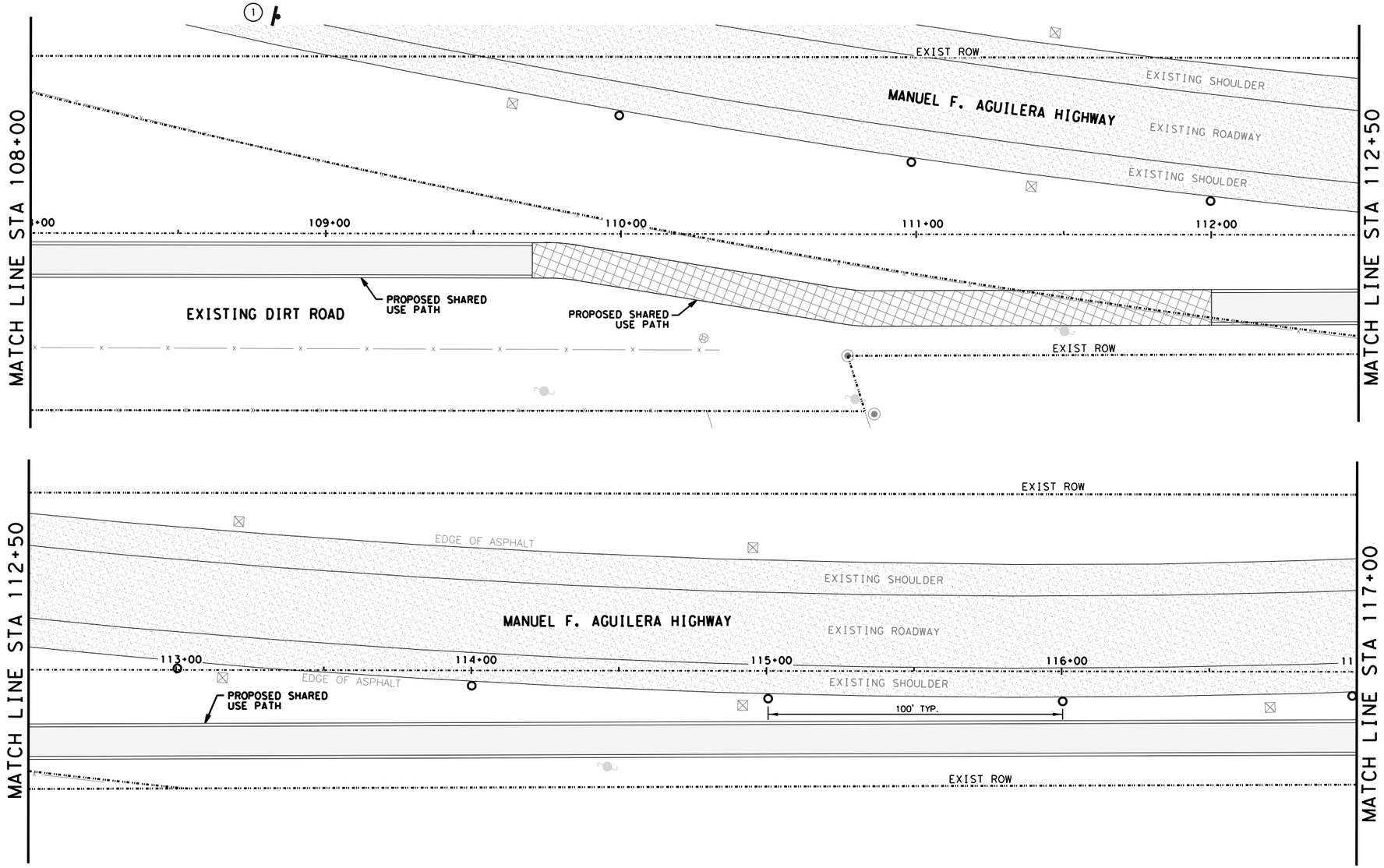

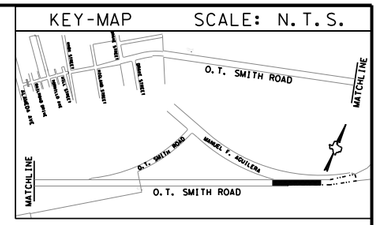

LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
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4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SIGN KEY

(1) ROAD WORK AHEAD
CW20-1D

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

STATE OF TEXAS · ROBERTO MORENO · 60910 · LICENSED PROFESSIONAL ENGINEER · 5/30/19

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 108+00 TO STA 117+00

SHEET 11 OF 12

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	34

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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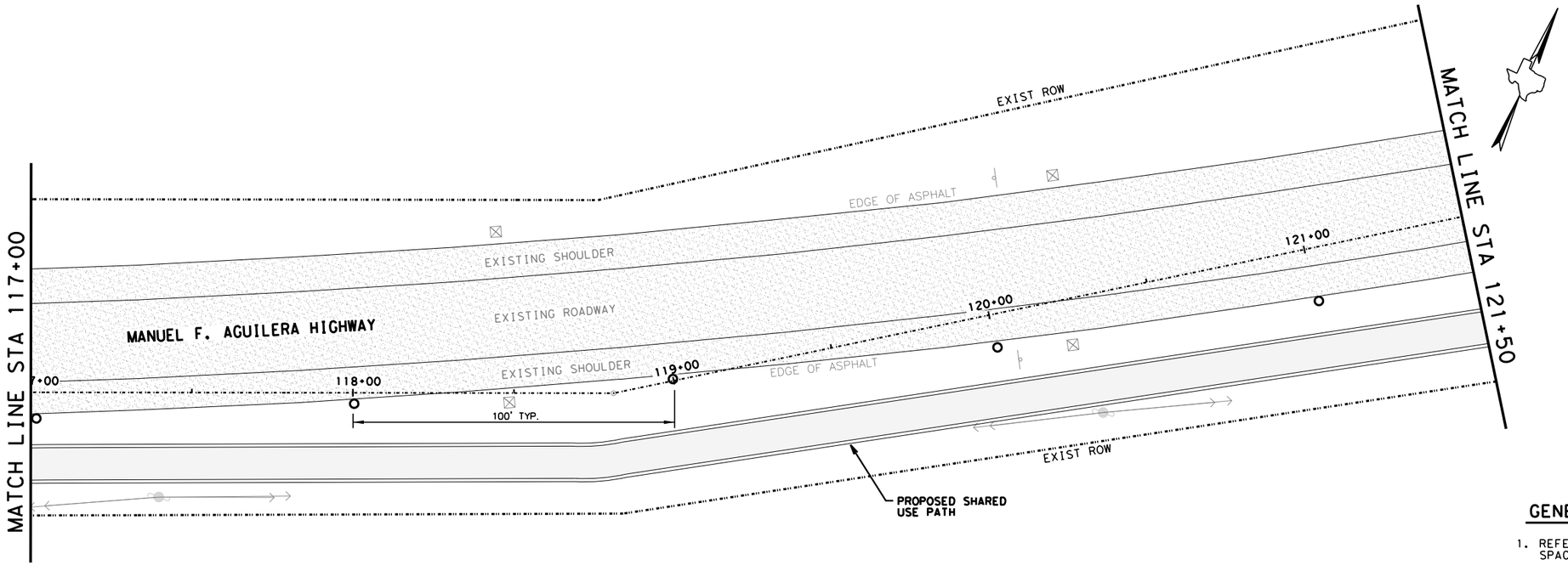

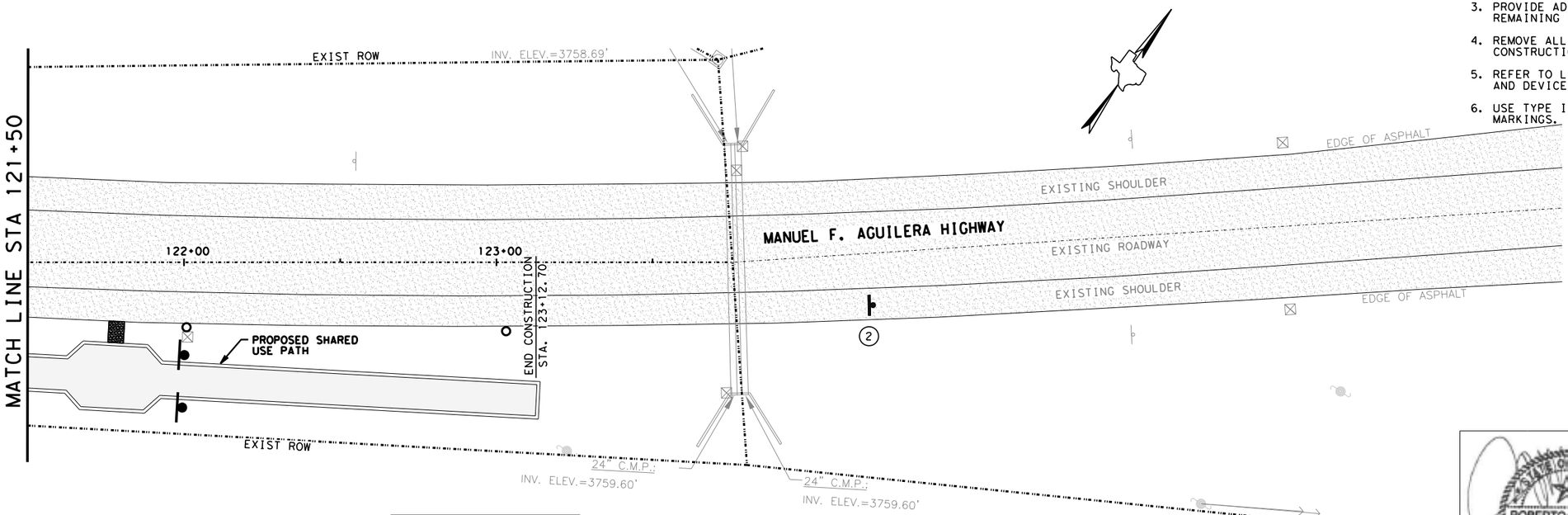

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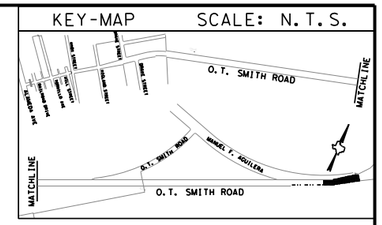

LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
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5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY

SIGN KEY

(2) END ROAD WORK G20-2a or 2b

STATE OF TEXAS · ROBERTO MORENO · 60910 · LICENSED PROFESSIONAL ENGINEER · 5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 1

STA 117+00 TO STA 123+12.70

SHEET 12 OF 12

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		35
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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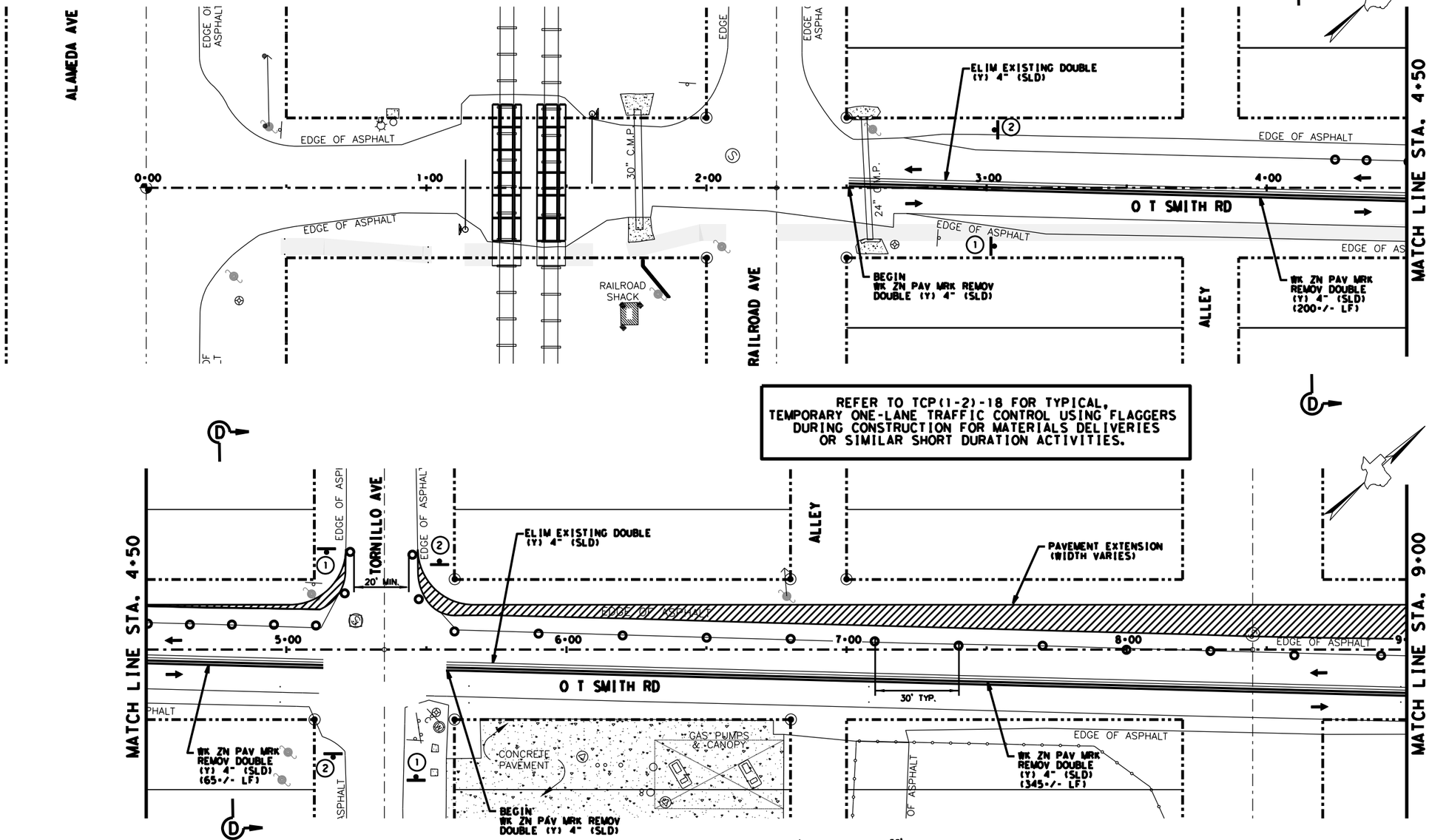
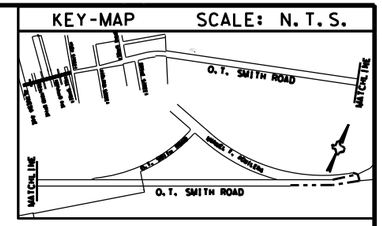


REFER TO TCP(1-2)-18 FOR TYPICAL, TEMPORARY ONE-LANE TRAFFIC CONTROL USING FLAGGERS DURING CONSTRUCTION FOR MATERIALS DELIVERIES OR SIMILAR SHORT DURATION ACTIVITIES.

KEY-MAP SCALE: N.T.S.



LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED PAVEMENT EXTENSION (WIDTH VARIES)
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
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4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

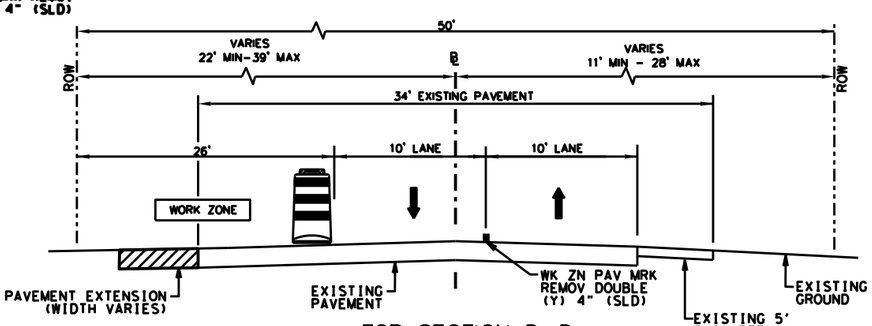
SIGN KEY

① ROAD WORK AHEAD — CW20-1D

② END ROAD WORK — G20-2a or 2b

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1220
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1220



TCP SECTION D-D

STATE OF TEXAS — ROBERTO MORENO 60910 LICENSED PROFESSIONAL ENGINEER 5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

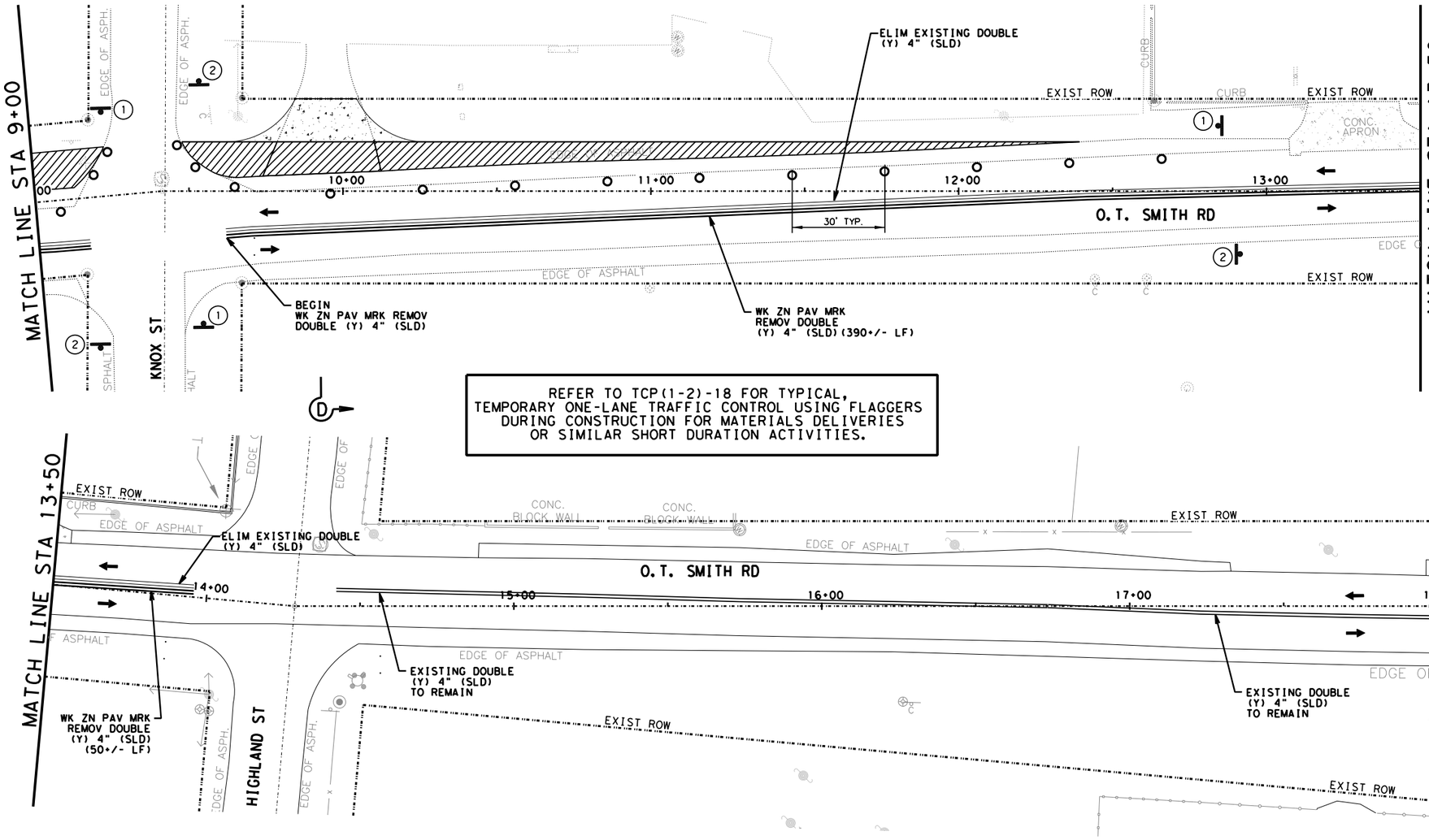
TRAFFIC CONTROL - PHASE 2

STA 0+00 TO STA 9+00

SHEET 1 OF 2

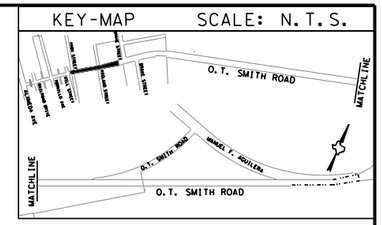
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		36
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

$DATE$ $TIME$ $USERNAME$ $FILE$



REFER TO TCP(1-2)-18 FOR TYPICAL, TEMPORARY ONE-LANE TRAFFIC CONTROL USING FLAGGERS DURING CONSTRUCTION FOR MATERIALS DELIVERIES OR SIMILAR SHORT DURATION ACTIVITIES.

KEY-MAP SCALE: N.T.S.



LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED PAVEMENT EXTENSION (WIDTH VARIES)
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

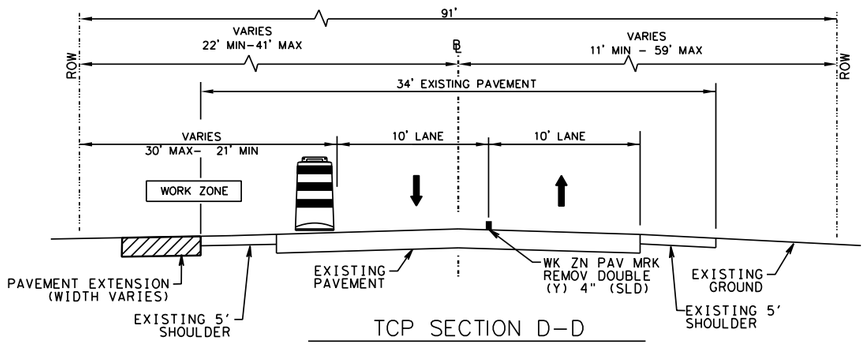
SIGN KEY

(1) ROAD WORK AHEAD — CW20-1D

(2) END ROAD WORK — G20-2a or 2b

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	920
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	920



TCP SECTION D–D

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

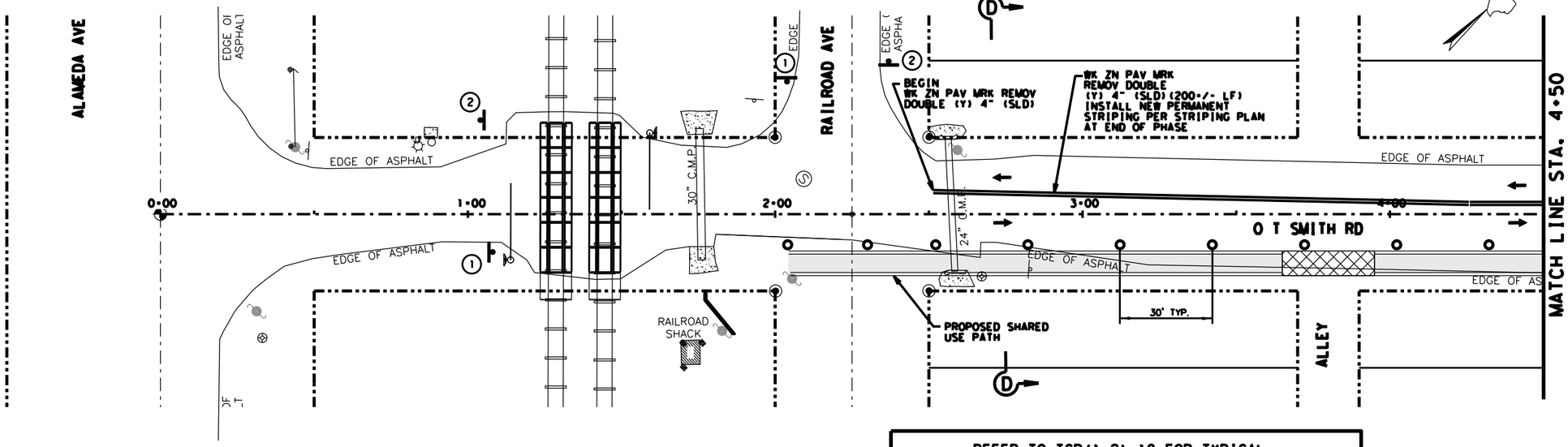
TRAFFIC CONTROL - PHASE 2

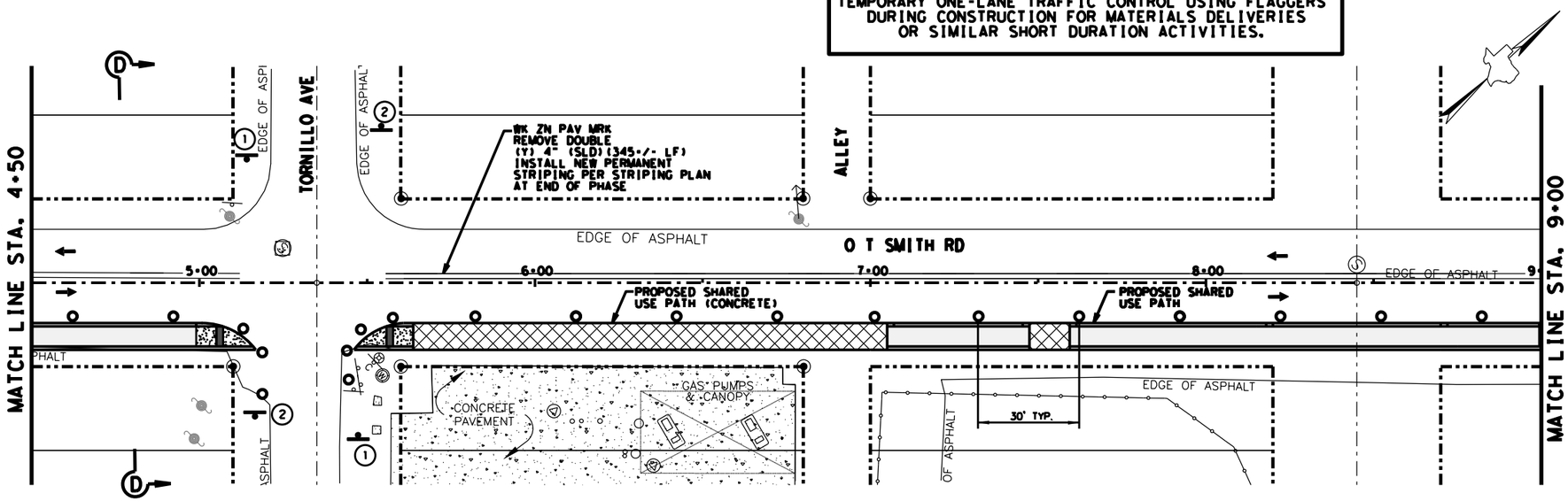
STA 9+00 TO STA 14+00

SHEET 2 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		37
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

$DATE$ $TIME$ $USERNAME$ $FILE$





REFER TO TCP(1-2)-18 FOR TYPICAL, TEMPORARY ONE-LANE TRAFFIC CONTROL USING FLAGGERS DURING CONSTRUCTION FOR MATERIALS DELIVERIES OR SIMILAR SHORT DURATION ACTIVITIES.

REFER TO TCP(1-2)-18 FOR TYPICAL, TEMPORARY ONE-LANE AND/OR HALF ROAD CLOSURE TRAFFIC CONTROL USING FLAGGERS DURING CONSTRUCTION ON SIDE STREETS FOR PAVEMENT REPLACEMENT AND/OR CROSSWALK STRIPING ACTIVITIES.

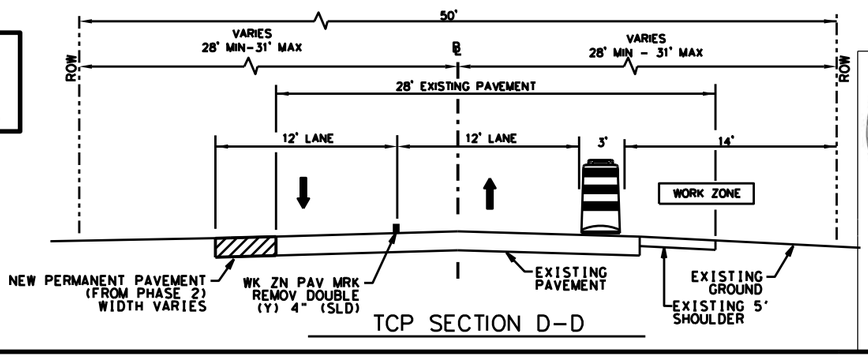
SIGN KEY

(1) ROAD WORK AHEAD — CW20-1D

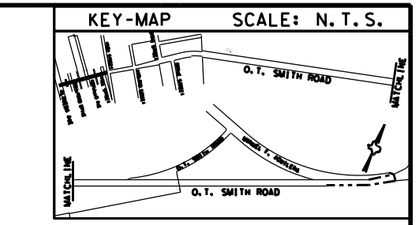
(2) END ROAD WORK — G20-2a or 2b

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1220
666	6126	REFL PAV MRK TY I (Y)4"(SLD)(100MIL)	LF	1220
666	6207	REFL PAV MRK TY II (Y)4"(SLD)	LF	1220
678	6001	PAV SURF PREP FOR MRK (4")	LF	1220



TCP SECTION D-D



LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
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6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

STATE OF TEXAS — ROBERTO MORENO — 60910 — LICENSED PROFESSIONAL ENGINEER — 5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

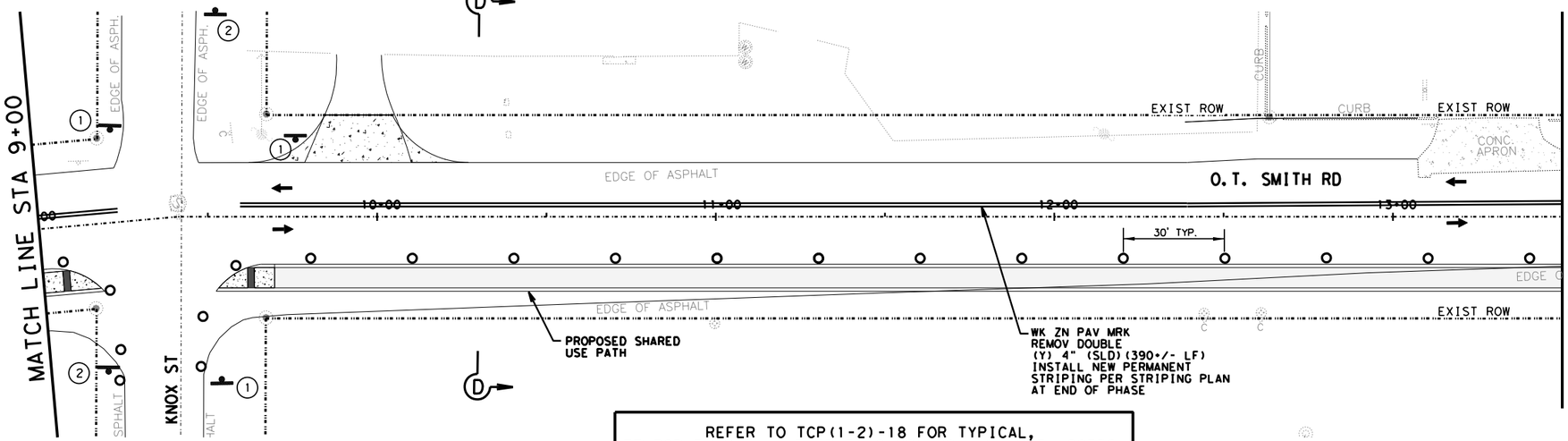
TRAFFIC CONTROL - PHASE 3

STA 0+00 TO STA 9+00

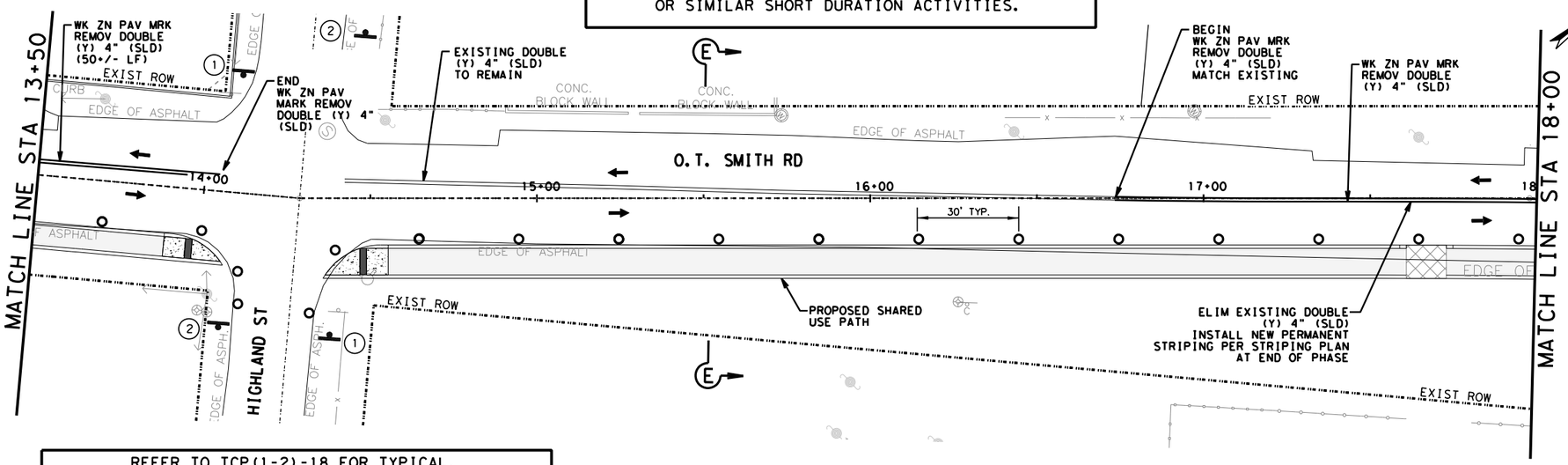
SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		38
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

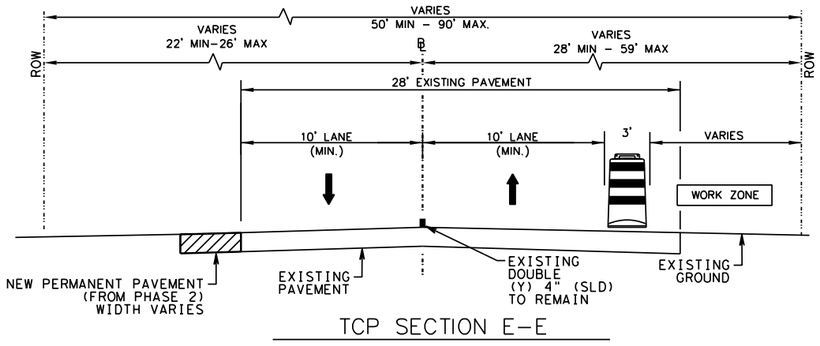
5/29/2019 5:22:35 PM aurora



REFER TO TCP(1-2)-18 FOR TYPICAL, TEMPORARY ONE-LANE TRAFFIC CONTROL USING FLAGGERS DURING CONSTRUCTION FOR MATERIALS DELIVERIES OR SIMILAR SHORT DURATION ACTIVITIES.



REFER TO TCP(1-2)-18 FOR TYPICAL, TEMPORARY ONE-LANE AND/OR HALF ROAD CLOSURE TRAFFIC CONTROL USING FLAGGERS DURING CONSTRUCTION ON SIDE STREETS FOR PAVEMENT REPLACEMENT AND/OR CROSSWALK STRIPING ACTIVITIES.



TCP SECTION E–E

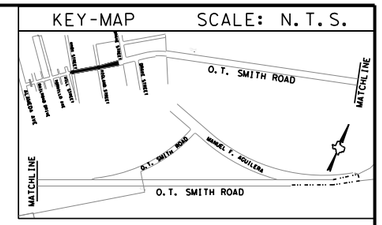
SIGN KEY

1	ROAD WORK AHEAD	CW20-1D
2	END ROAD WORK	G20-2a or 2b

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1174
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	127
666	6126	REFL PAV MRK TY I (Y)4"(SLD)(100MIL)	LF	1174
666	6207	REFL PAV MRK TY II (Y)4"(SLD)	LF	1174
678	6001	PAV SURF PREP FOR MRK (4")	LF	1174

KEY-MAP SCALE: N.T.S.



LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

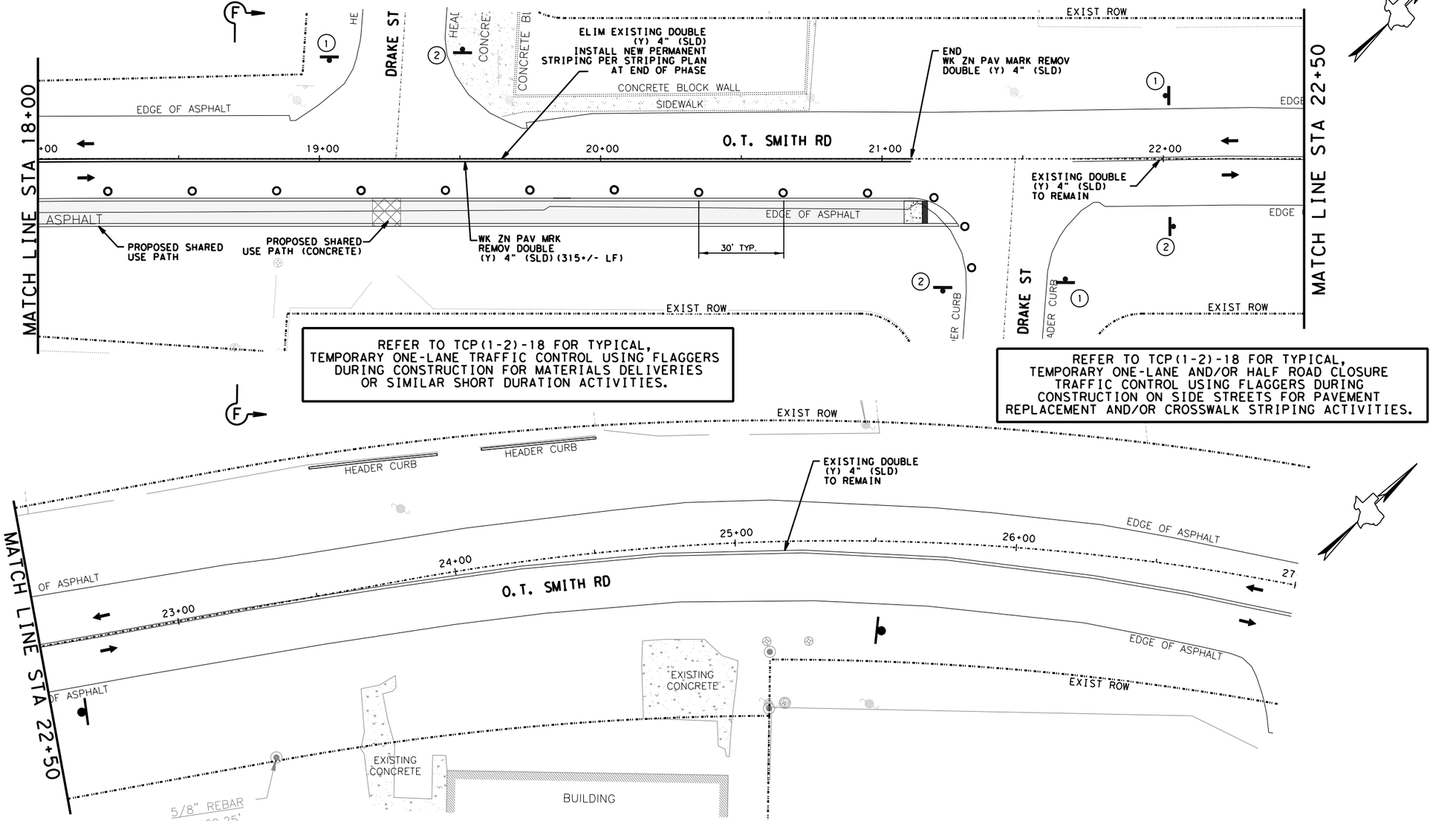
TRAFFIC CONTROL - PHASE 3

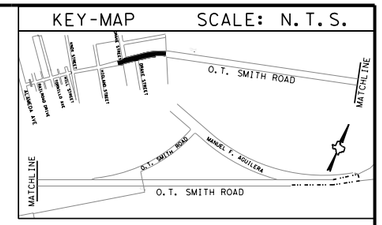
STA 9+00 TO STA 18+00

SHEET 2 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		39
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

F:\81113\DGN\s\81113 - TCP_Ph3_02.dgn



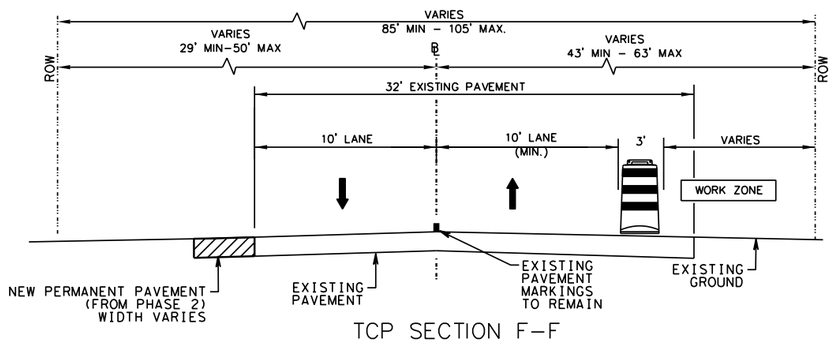


LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-14 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERALL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.



TCP SECTION F–F

SIGN KEY

① ROAD WORK AHEAD — CW20-1D

② END ROAD WORK — G20-2a or 2b

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	630
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	630
666	6126	REFL PAV MRK TY I (Y)4"(SLD)(100MIL)	LF	630
666	6207	REFL PAV MRK TY II (Y)4"(SLD)	LF	630
678	6001	PAV SURF PREP FOR MRK (4")	LF	630

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 3

STA 18+00 TO STA 27+00

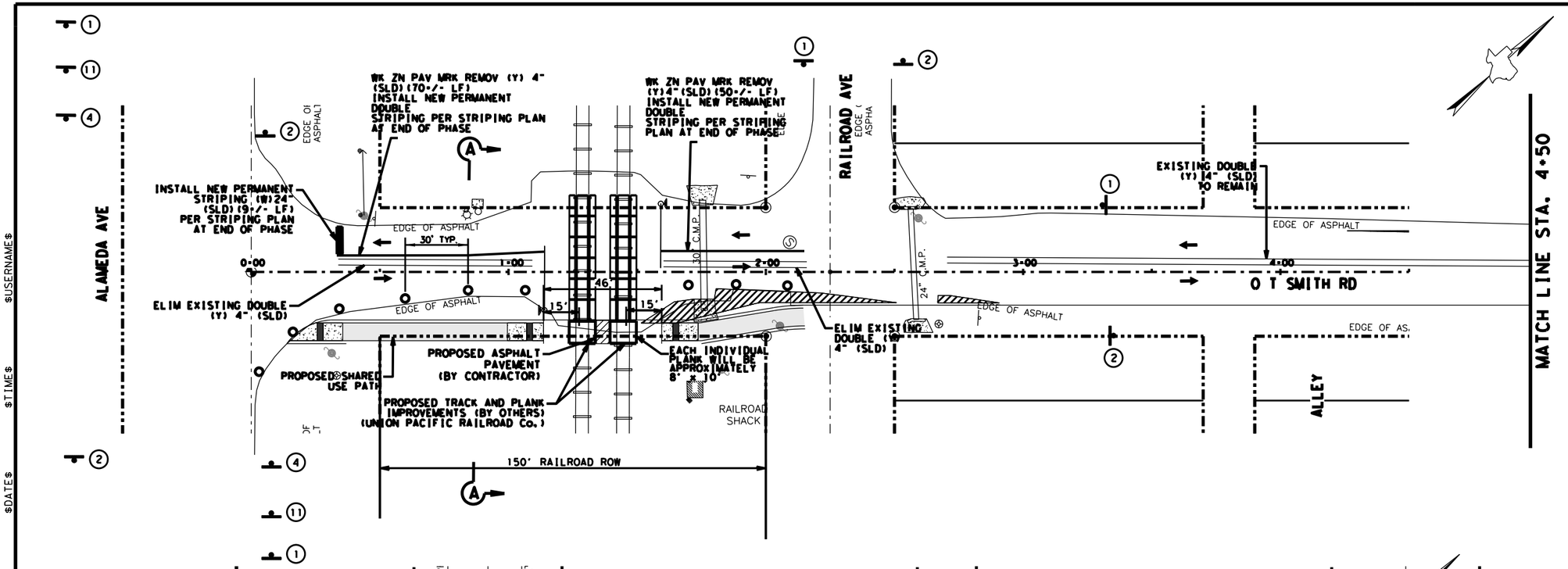
SHEET 3 OF 3

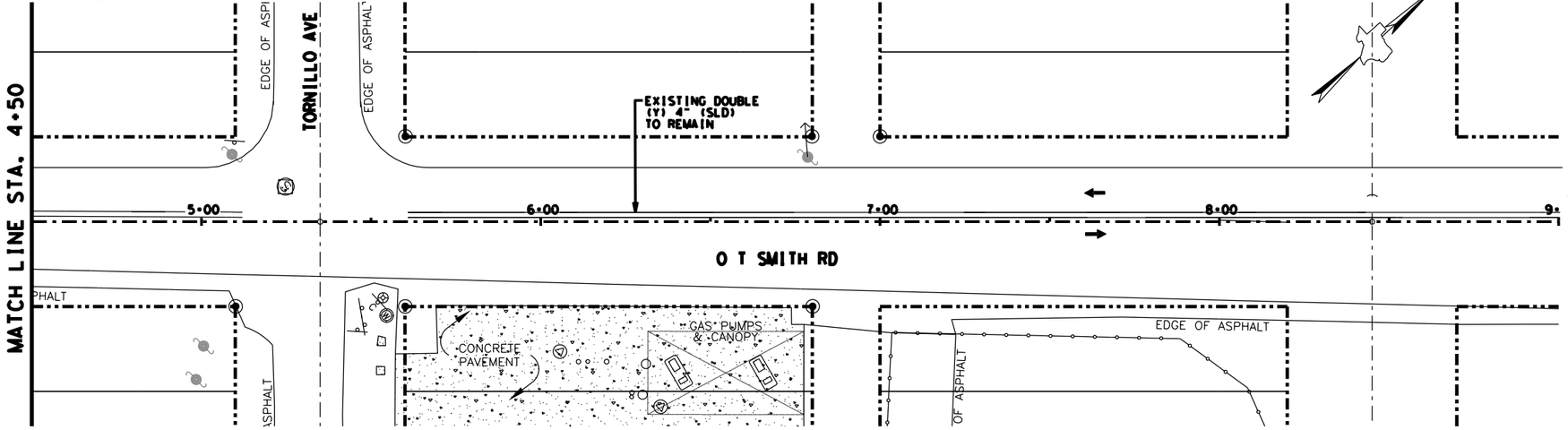
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		40
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

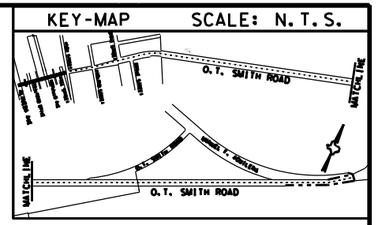
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

5/29/2019 5:23:38 PM aurora

F:\8113\DGN\s\8113 - TCP_Ph3_03.dgn







LEGEND

- 20+00 — BASELINE (℄)
- PROPOSED SHARED USE PATH (ASPHALT)
- PROPOSED SHARED USE PATH (CONCRETE)
- PROPOSED H/C RAMP
- EXISTING CONCRETE
- DENOTES TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION WARNING SIGN
- CHANNELIZING DEVICES (DRUMS)

GENERAL NOTES

1. REFER TO SHEET BC(2)-07 FOR TYPICAL WARNING SIGNS SIZE AND SPACING.
2. SIGNS, BARRICADES, AND CHANNELIZATION DEVICES MAY NOT BE SHOWN AT A PRECISE OR MEASURED POSITION. PLACE BARRICADES, DEVICES AND/OR SIGNS IN POSITIONS TO MEET FIELD CONDITIONS.
3. PROVIDE ADEQUATE TRANSITION BETWEEN COMPLETED PHASES AND REMAINING CONSTRUCTION.
4. REMOVE ALL EXISTING SIGNS AND MARKINGS IN CONFLICT WITH CONSTRUCTION AS SOON AS POSSIBLE.
5. REFER TO LINE DIAGRAM AND OVERAL DETOUR PLAN FOR SIGNS AND DEVICES REQUIRED IN ADVANCE OF THE PROJECT AREA.
6. USE TYPE II PAVEMENT MARKINGS AS SEALER FOR TYPE I PAVEMENT MARKINGS.

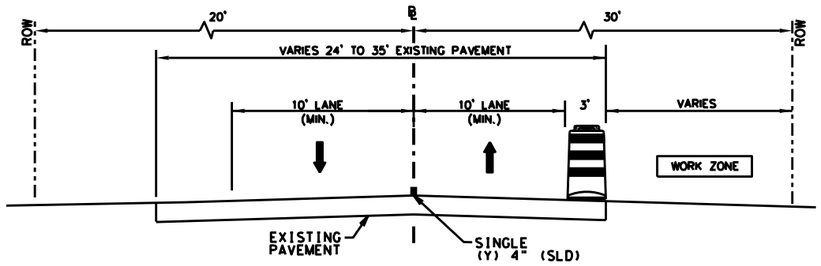
0 20 40
SCALE: 1"=40'

SIGN KEY

1. ROAD WORK AHEAD — CW20-1D
2. END ROAD WORK — G20-2a or 2b
4. WORK ZONE / TRAFFIC FINES DOUBLE / WHEN WORKERS ARE PRESENT — G20-9TP, R20-5T, R20-5aTP PLAQUE
11. ROAD WORK NEXT 2 MILES — G20-1bL or G20-1bR

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	120
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	240
666	6126	REFL PAV MRK TY I (Y)4"(SLD)(100MIL)	LF	240
666	6207	REFL PAV MRK TY II (Y)4"(SLD)	LF	240
678	6001	PAV SURF PREP FOR MRK (4")	LF	240
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	9
666	6182	REFL PAV MRK TY II (W)24"(SLD)	LF	9
678	6008	PAV SURF PREP FOR MRK (24")	LF	9



TCP SECTION A–A

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

STATE OF TEXAS — ROBERTO MORENO — 60910 — LICENSED PROFESSIONAL ENGINEER — 5/30/19

MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TRAFFIC CONTROL - PHASE 4

STA 0+00 TO STA 9+00

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		41
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

$DATE$ $TIME$ $USERNAME$ $FILE$

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

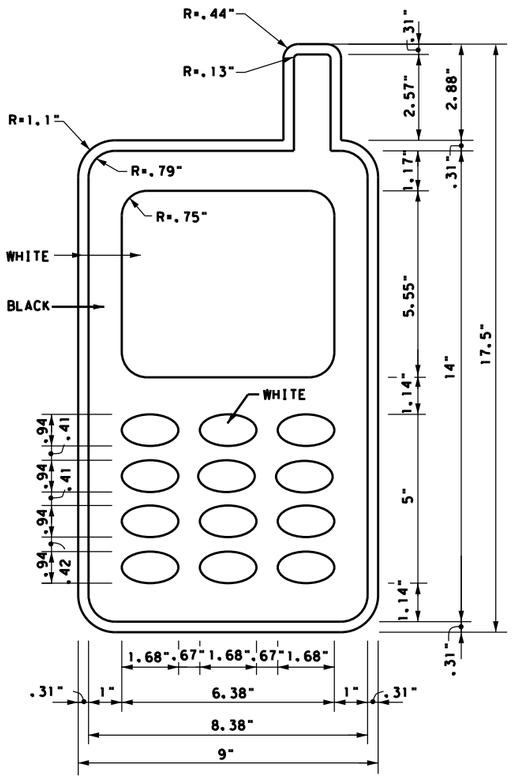
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.



SIGN DETAIL (G20-10T)

3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow; "STAY ALERT" Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange; "TALK OR TEXT LATER" Font: C specified length;

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

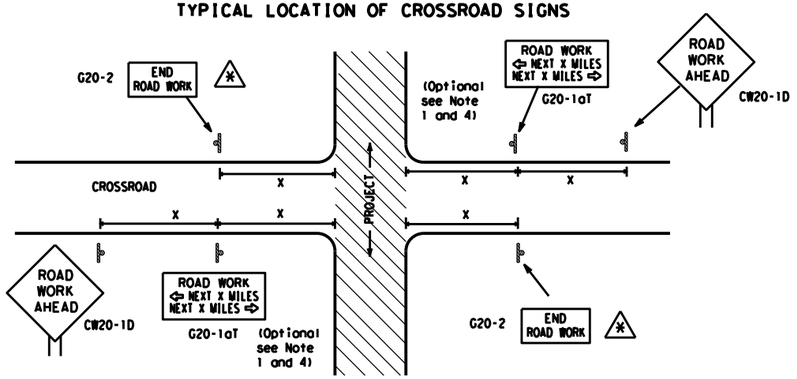
Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
4-03 5-10 8-14	DIST	COUNTY		SHEET NO.
9-07 7-13	ELP	EL PASO		42

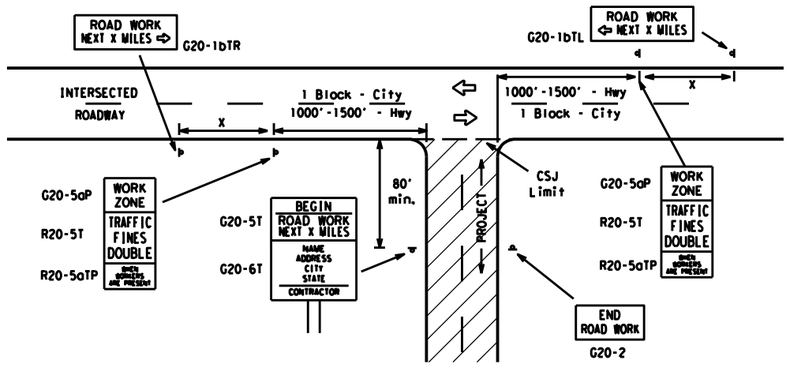
TYPICAL LOCATION OF CROSSROAD SIGNS



✱ May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign Spacing "X" △
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
✱	✱[3]

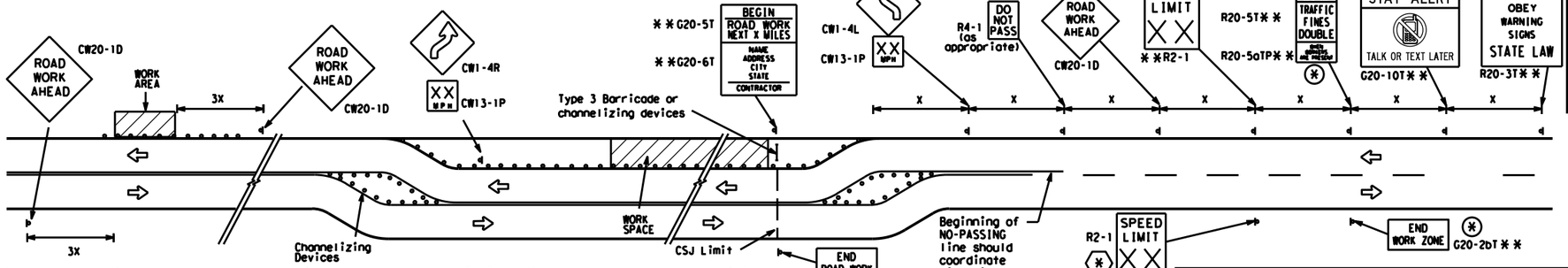
✱ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

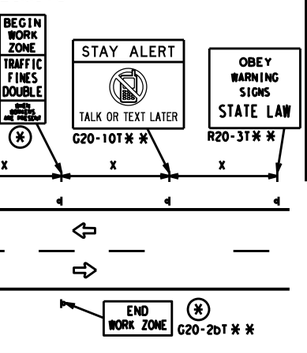
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

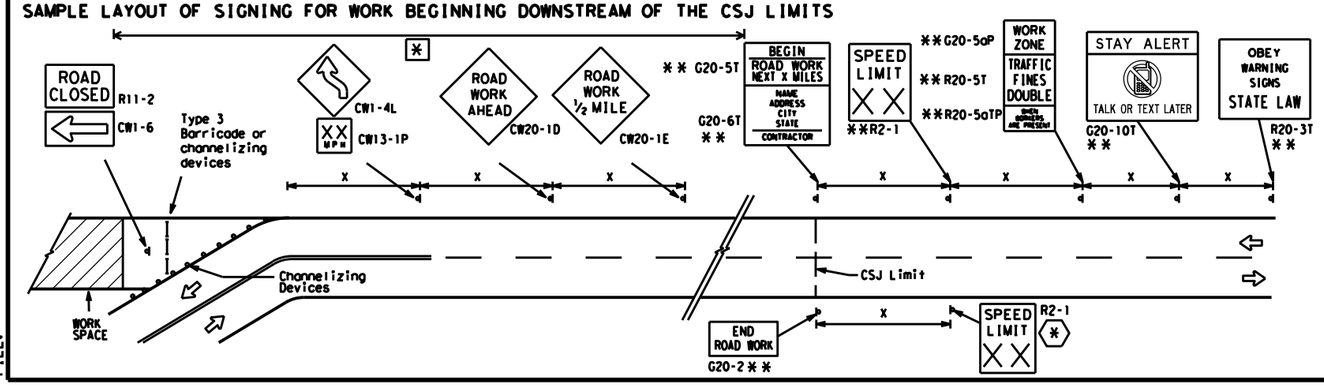


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

✱ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

✱✱ Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[✱] Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

(✱) Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
⊢⊣	Type 3 Barricade
○○○	Channelizing Devices
▂	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	ELP	EL PASO		43

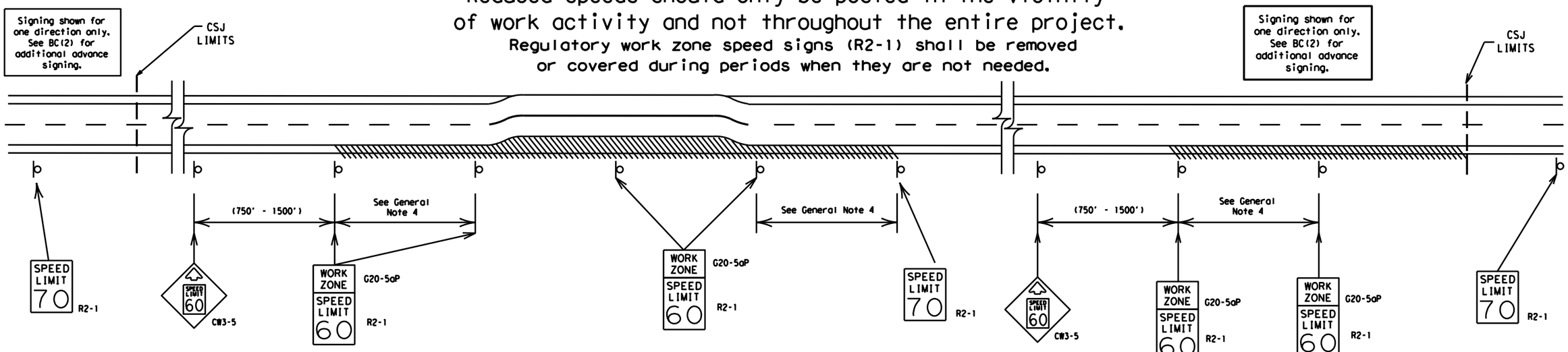
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the travelled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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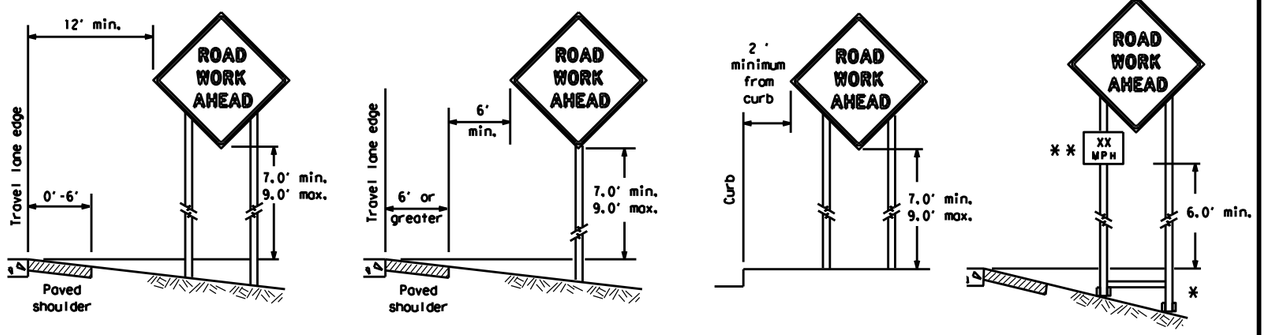
REVISIONS 9-07 8-14 7-13	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		44

DATE:
FILE:

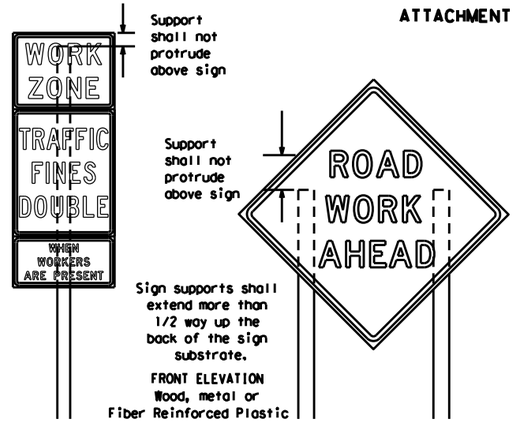
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



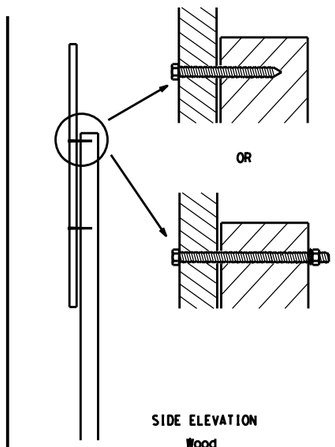
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or Fiber Reinforced Plastic



SIDE ELEVATION
Wood

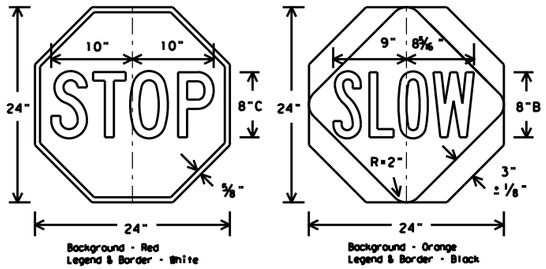
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	ELP	EL PASO		45

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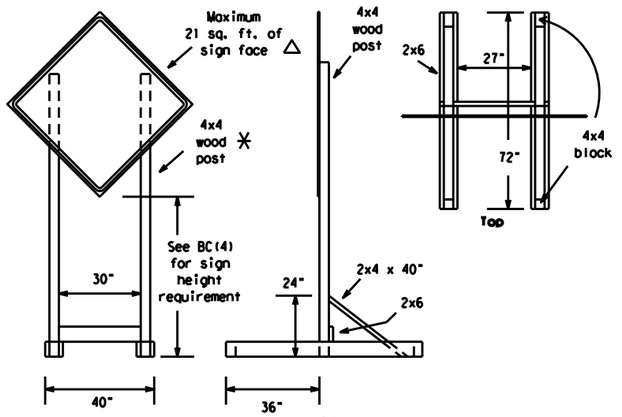
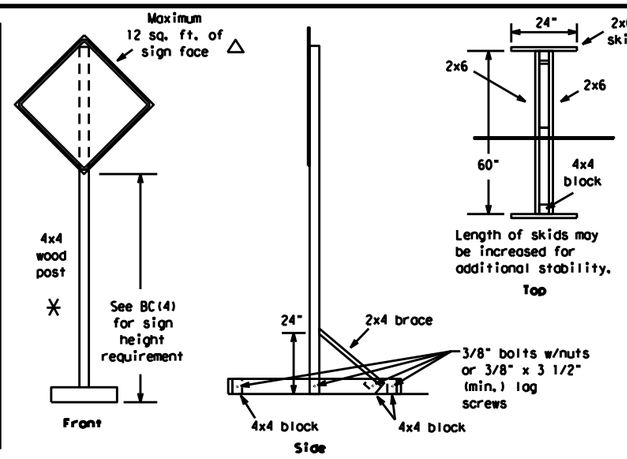
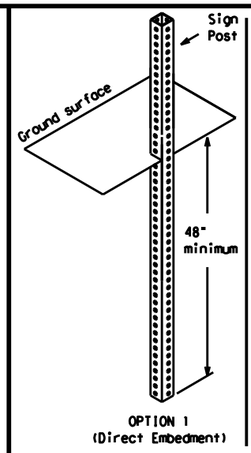
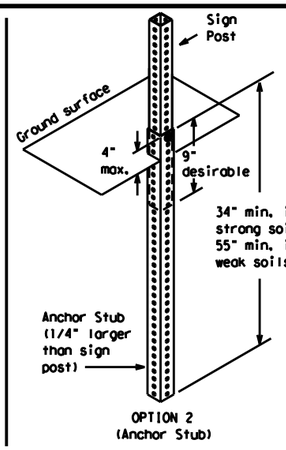


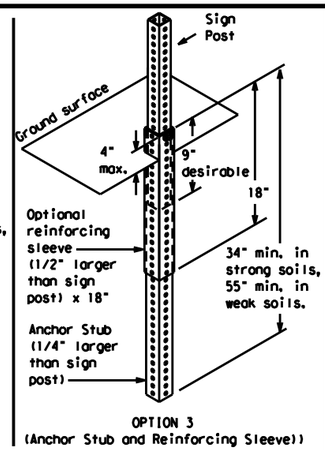


SKID MOUNTED WOOD SIGN SUPPORTS

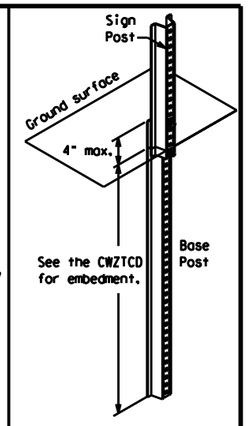
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □







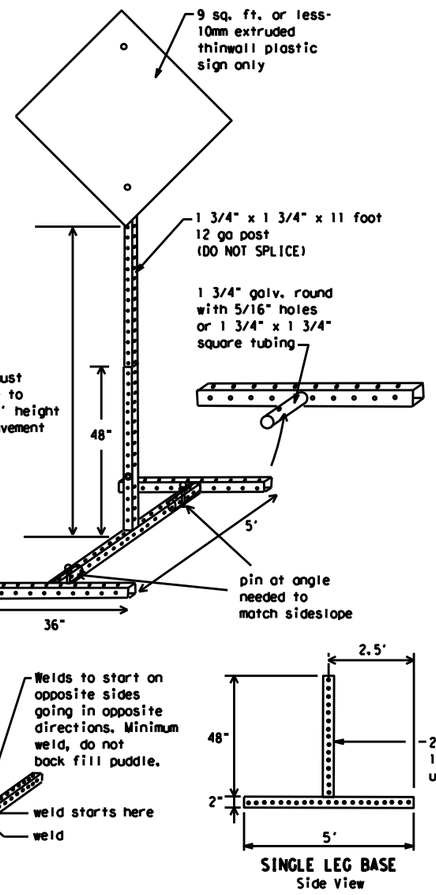
PERFORATED SQUARE METAL TUBING

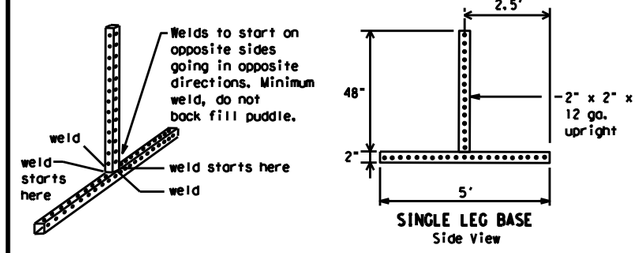


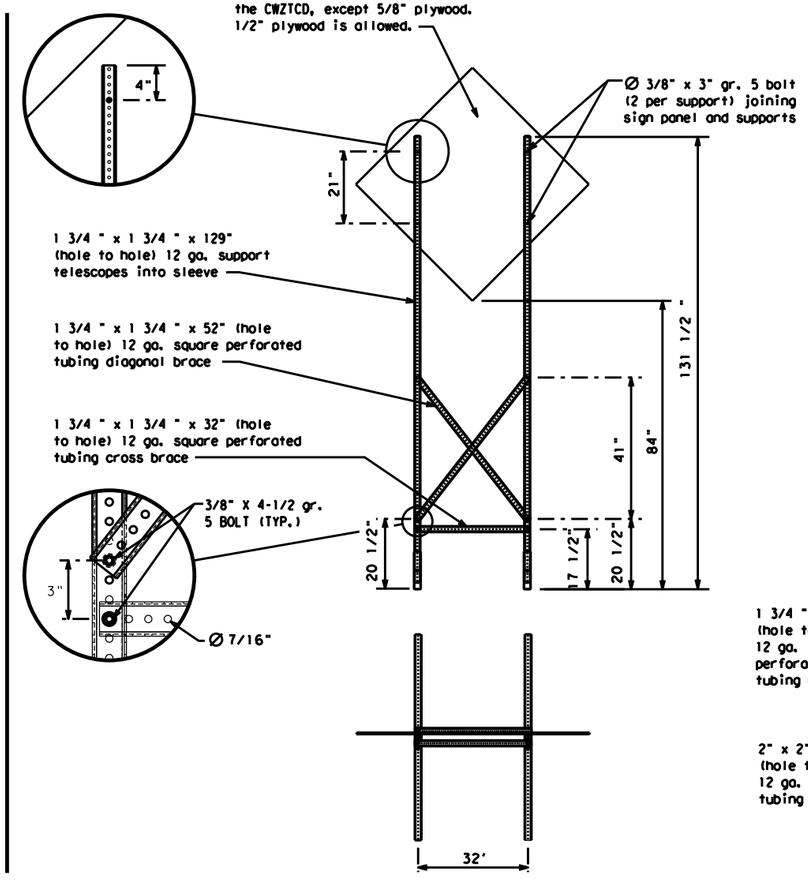
WING CHANNEL
Lap-splice/base bolted anchor

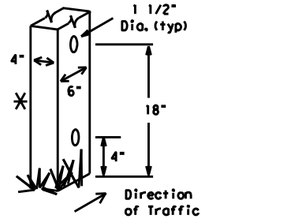
GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.



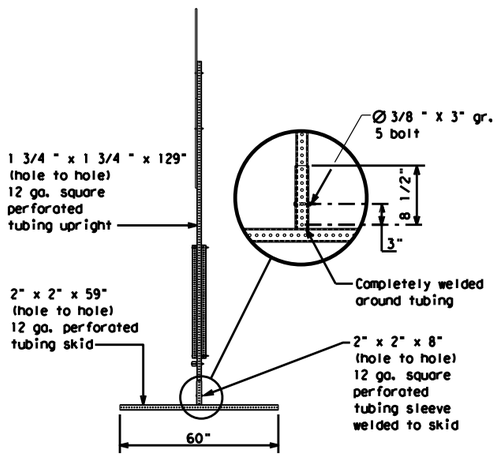






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

* Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Texas Department of Transportation

Traffic Operations Division Standard

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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7-13	ELP	EL PASO		46

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation = IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

Other Condition List

- ROADWORK XXX FT
- ROAD REPAIRS XXXX FT
- FLAGGER XXXX FT
- LANE NARROWS XXXX FT
- RIGHT LN NARROWS XXXX FT
- TWO-WAY TRAFFIC XX MILE
- MERGING TRAFFIC XXXX FT
- CONST TRAFFIC XXX FT
- LOOSE GRAVEL XXXX FT
- UNEVEN LANES XXXX FT
- DETOUR X MILE
- ROUGH ROAD XXXX FT
- ROADWORK PAST SH XXXX
- ROADWORK NEXT FRI-SUN
- BUMP XXXX FT
- US XXX EXIT X MILES
- TRAFFIC SIGNAL XXXX FT
- LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-XX N
- TRUCKS USE US XXX N
- WATCH FOR TRUCKS
- WATCH FOR TRUCKS
- EXPECT DELAYS
- EXPECT DELAYS
- PREPARE TO STOP
- REDUCE SPEED XXX FT
- END SHOULDER USE
- USE OTHER ROUTES
- WATCH FOR WORKERS
- STAY IN LANE *

Location List

- AT FM XXXX
- BEFORE RAILROAD CROSSING
- NEXT X MILES
- PAST US XXX EXIT
- XXXXXXX TO XXXXXXX
- US XXX TO FM XXXX

Warning List

- SPEED LIMIT XX MPH
- MAXIMUM SPEED XX MPH
- MINIMUM SPEED XX MPH
- ADVISORY SPEED XX MPH
- RIGHT LANE EXIT
- USE CAUTION
- DRIVE SAFELY
- DRIVE WITH CARE

** Advance Notice List

- TUE-FRI XX AM- X PM
- APR XX-XX X PM-X AM
- BEGINS MONDAY
- BEGINS MAY XX
- MAY X-X XX PM - XX AM
- NEXT FRI-SUN
- XX AM TO XX PM
- NEXT TUE AUG XX
- TONIGHT XX PM- XX AM

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
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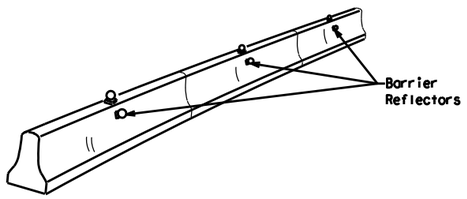
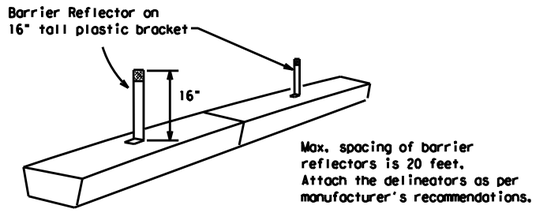
DATE:
FILE:

1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

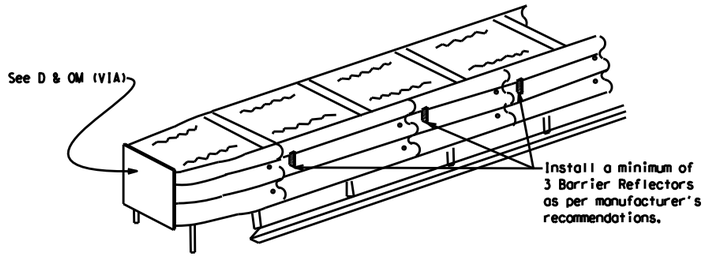


CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)

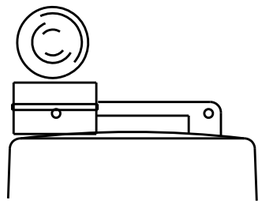


DELINEATION OF END TREATMENTS

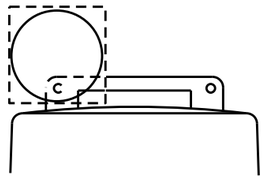
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

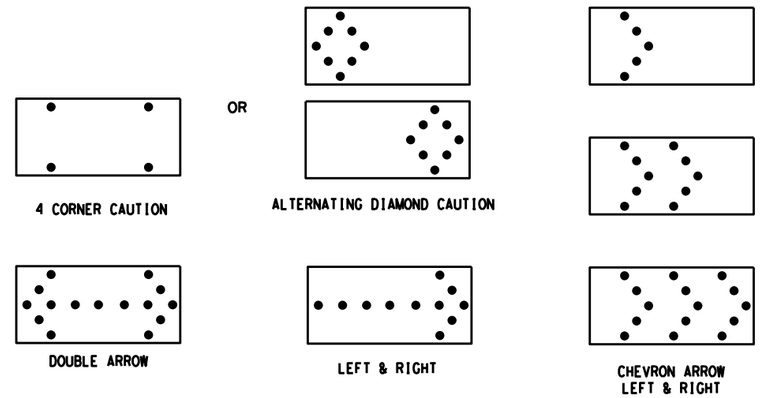
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION
Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	ELP	EL PASO		48

DATE:
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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

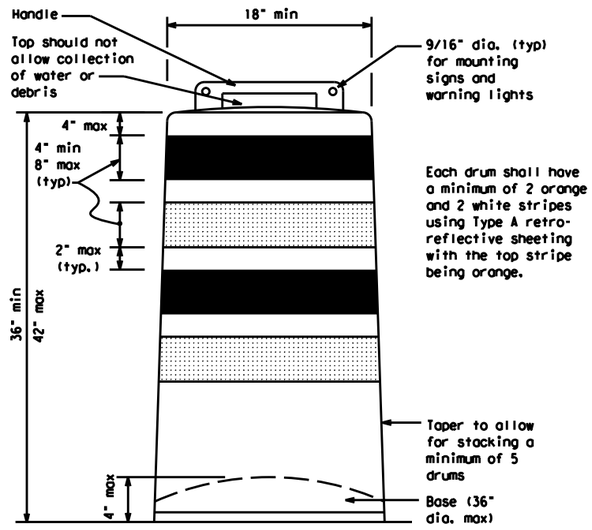
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

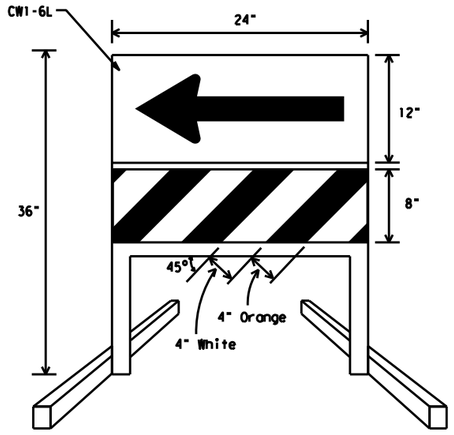
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

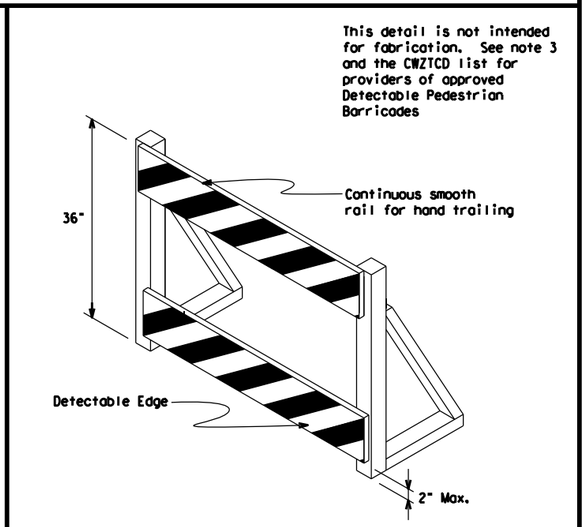
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.





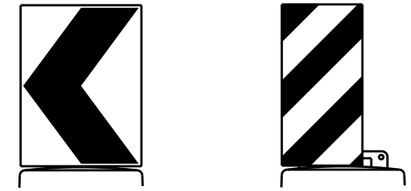
DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.



DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer

12" x 24"
Vertical Panel
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	ELP	EL PASO		49

DATE:
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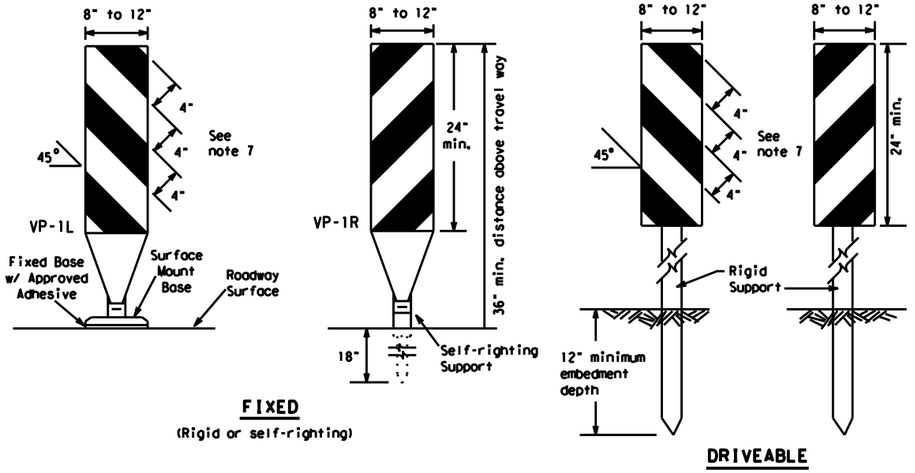
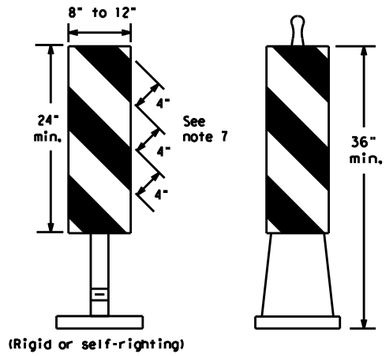


FIXED
(Rigid or self-righting)

DRIVEABLE

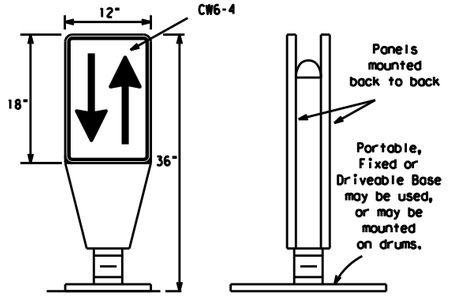


(Rigid or self-righting)

PORTABLE

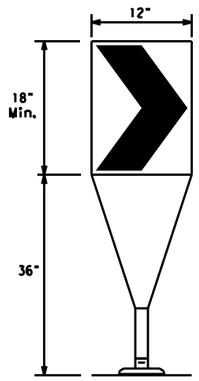
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



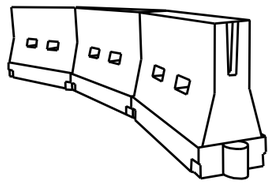
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices should be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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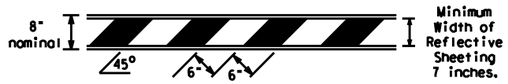
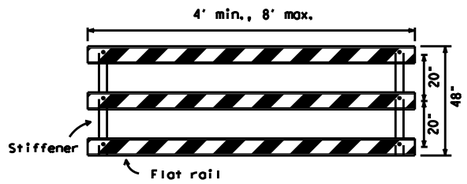
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



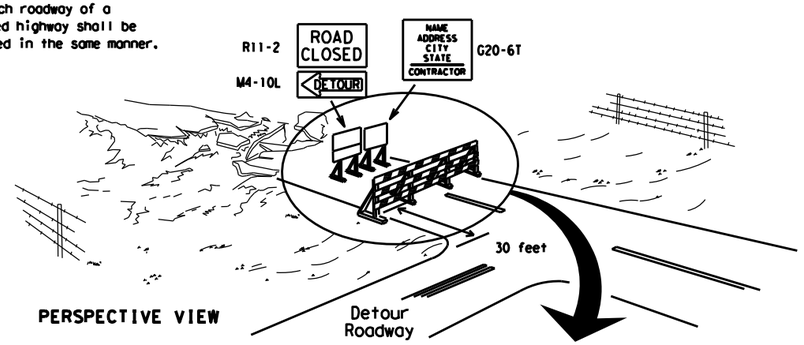
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

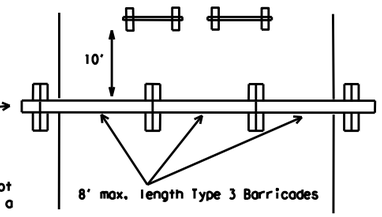
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

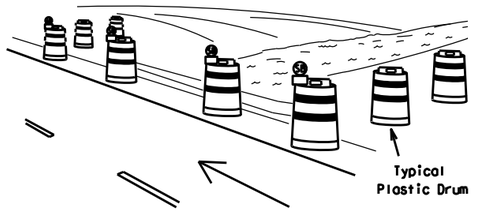
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

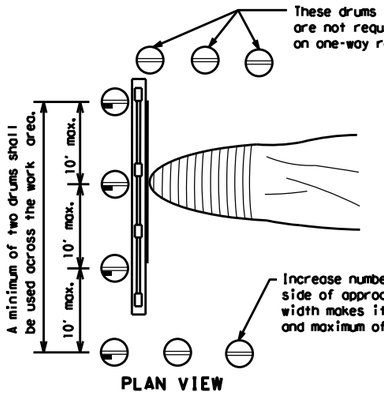
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

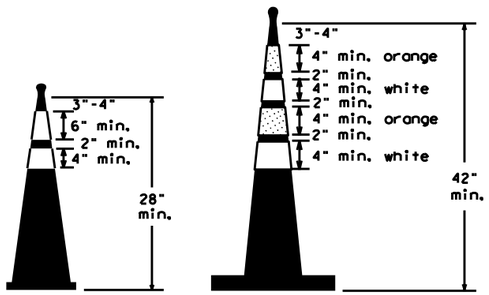
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

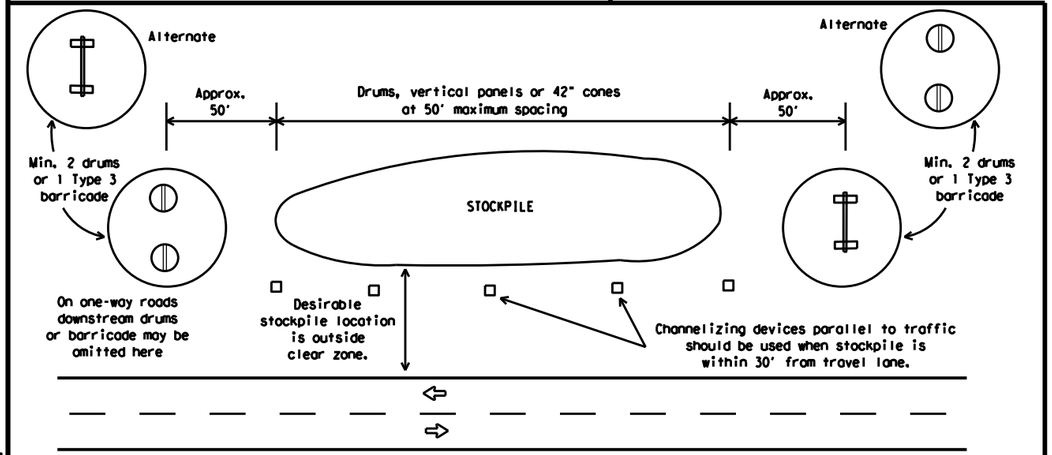
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.

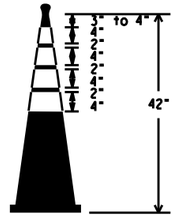
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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REVISIONS 9-07 8-14 7-13	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		51

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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

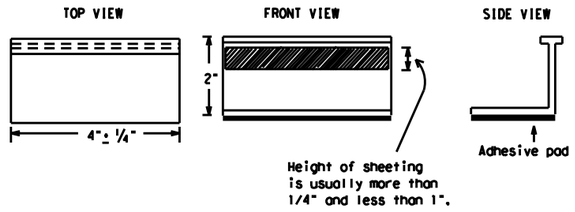
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

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11-02 8-14				

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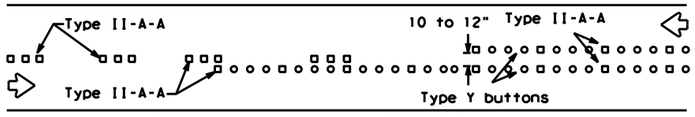
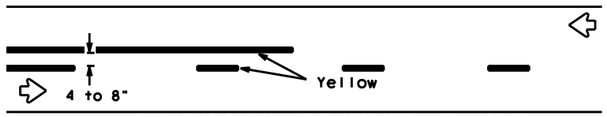
PAVEMENT MARKING PATTERNS

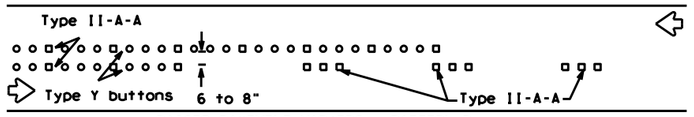
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



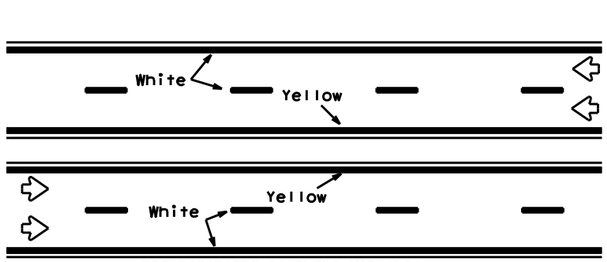
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



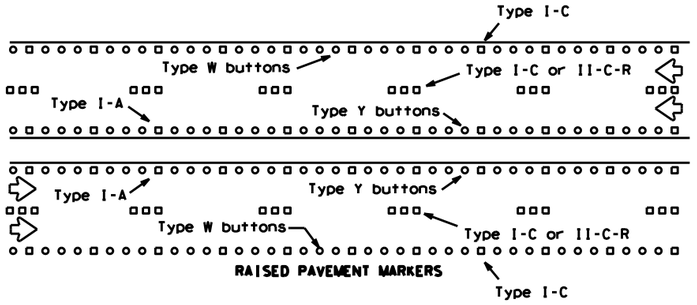
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



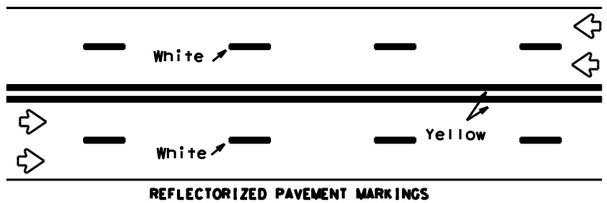
REFLECTORIZED PAVEMENT MARKINGS



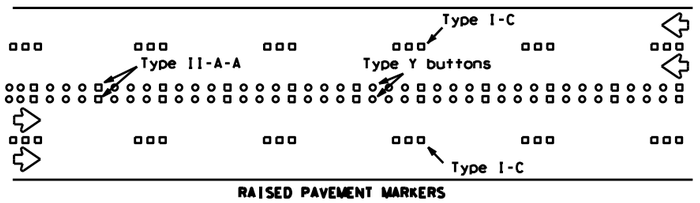
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



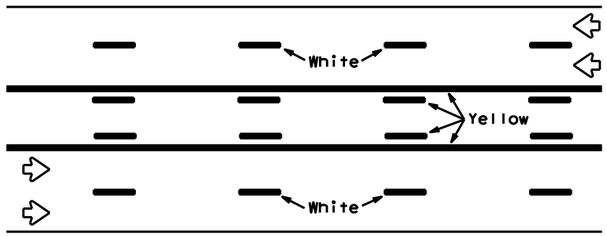
REFLECTORIZED PAVEMENT MARKINGS



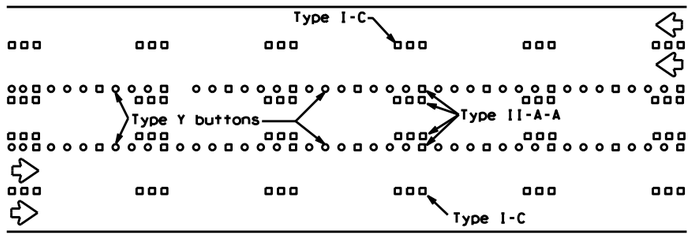
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

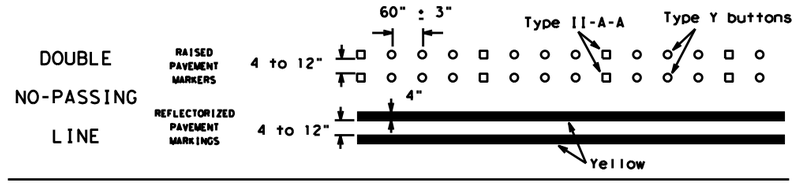
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

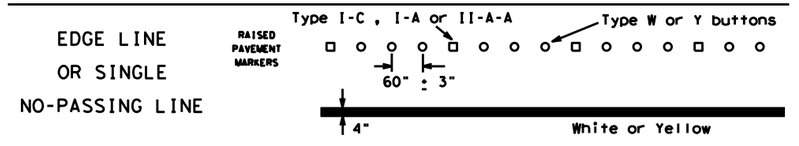
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

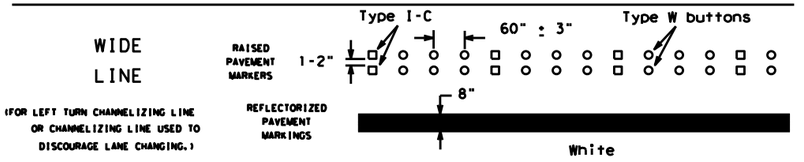


EDGE LINE OR SINGLE NO-PASSING LINE



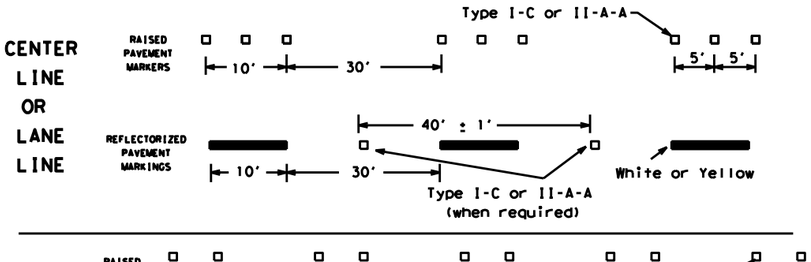
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

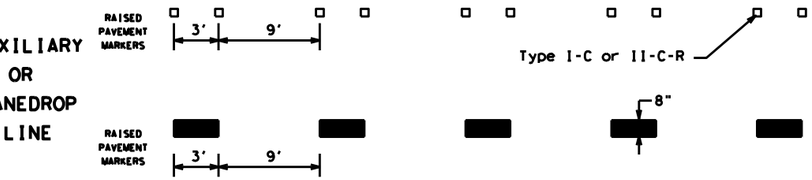


BROKEN LINES

CENTER LINE OR LANE LINE

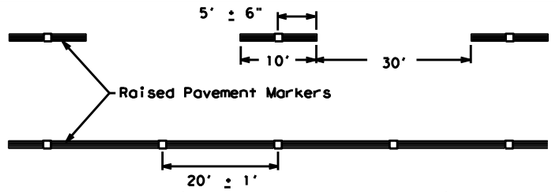


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

SHEET 12 OF 12

Texas Department of Transportation

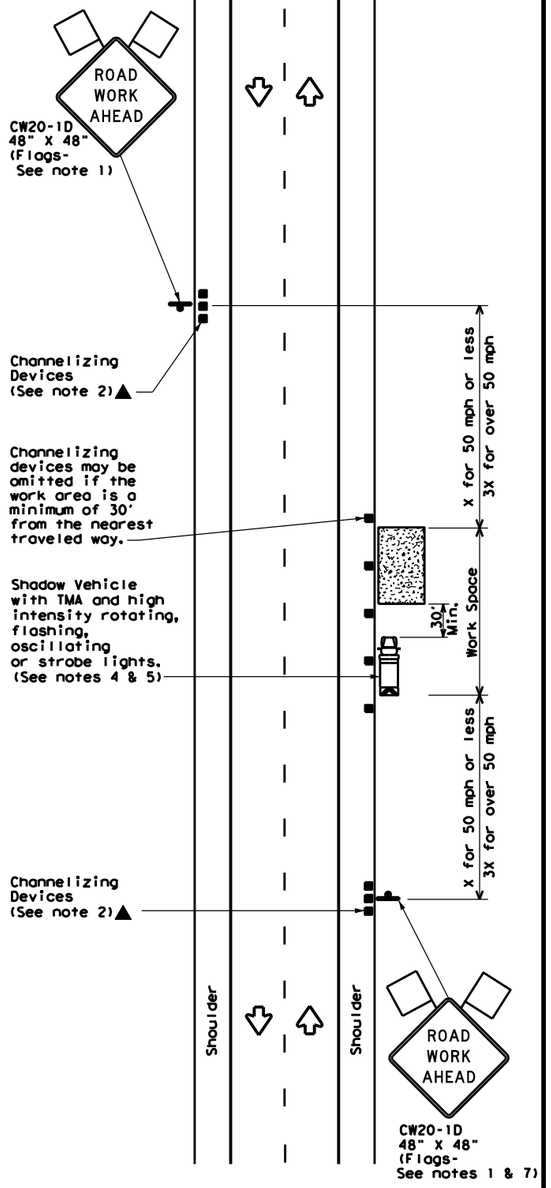
Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-14

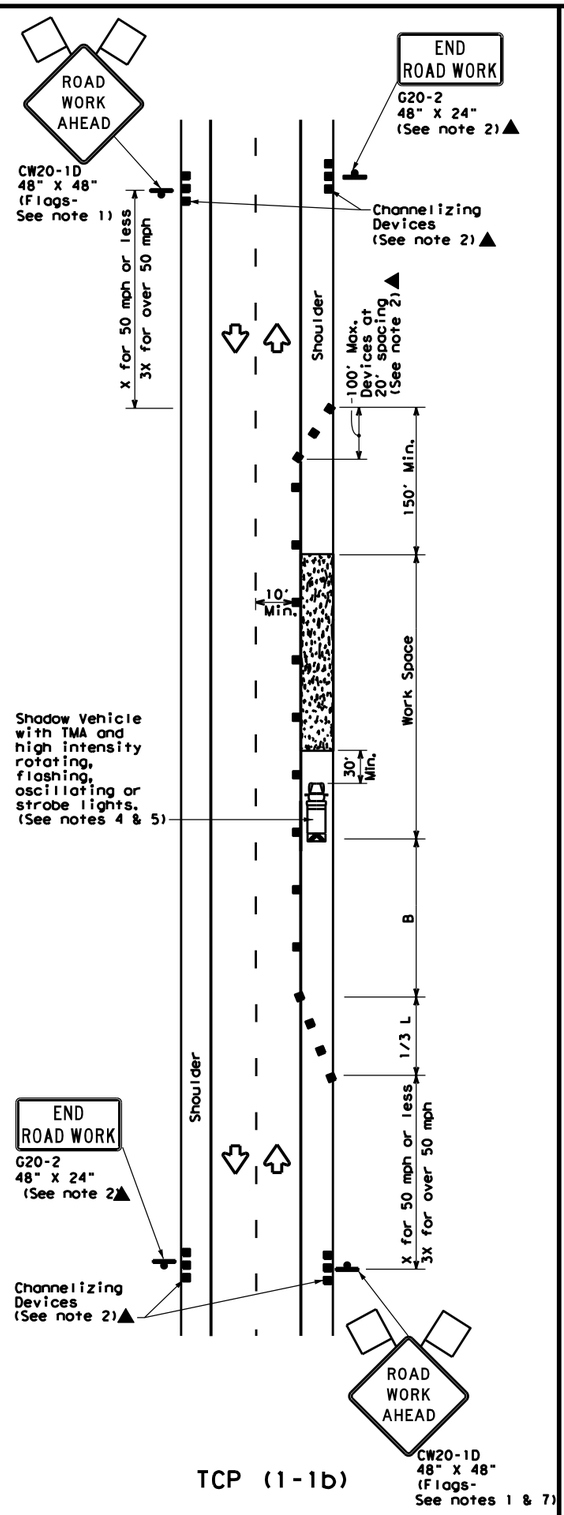
FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13	ELP	EL PASO		53
11-02 8-14				

DATE:
FILE:



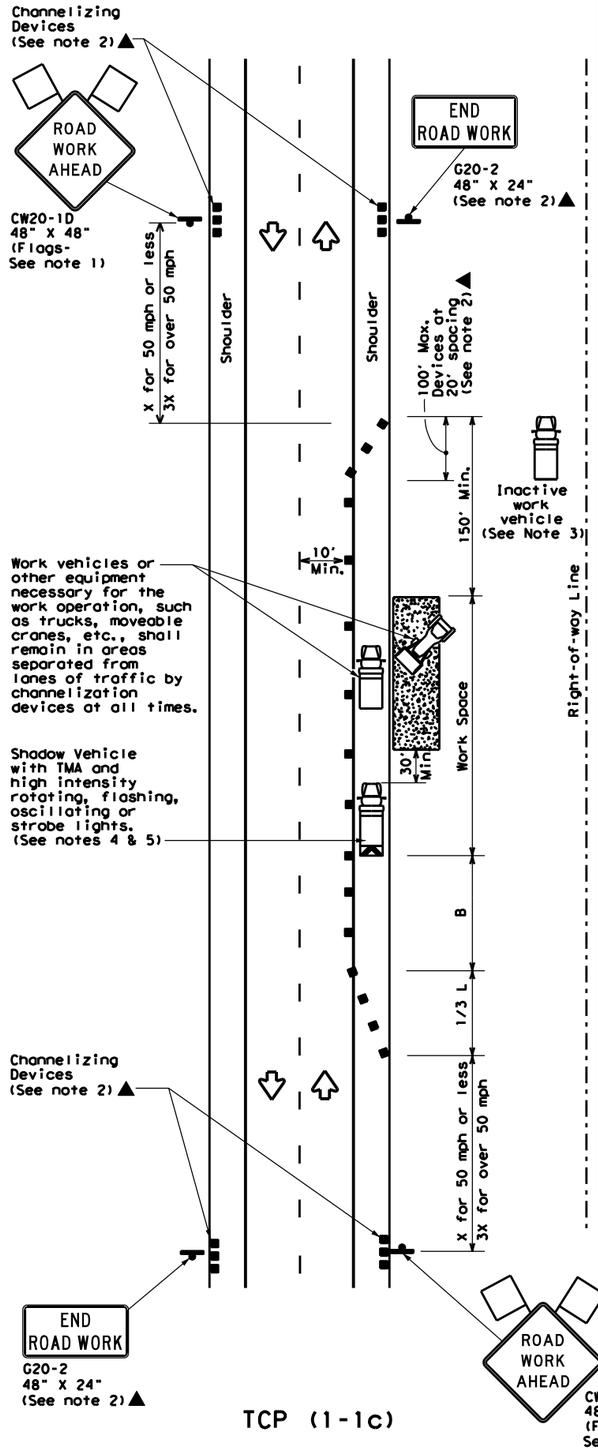
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

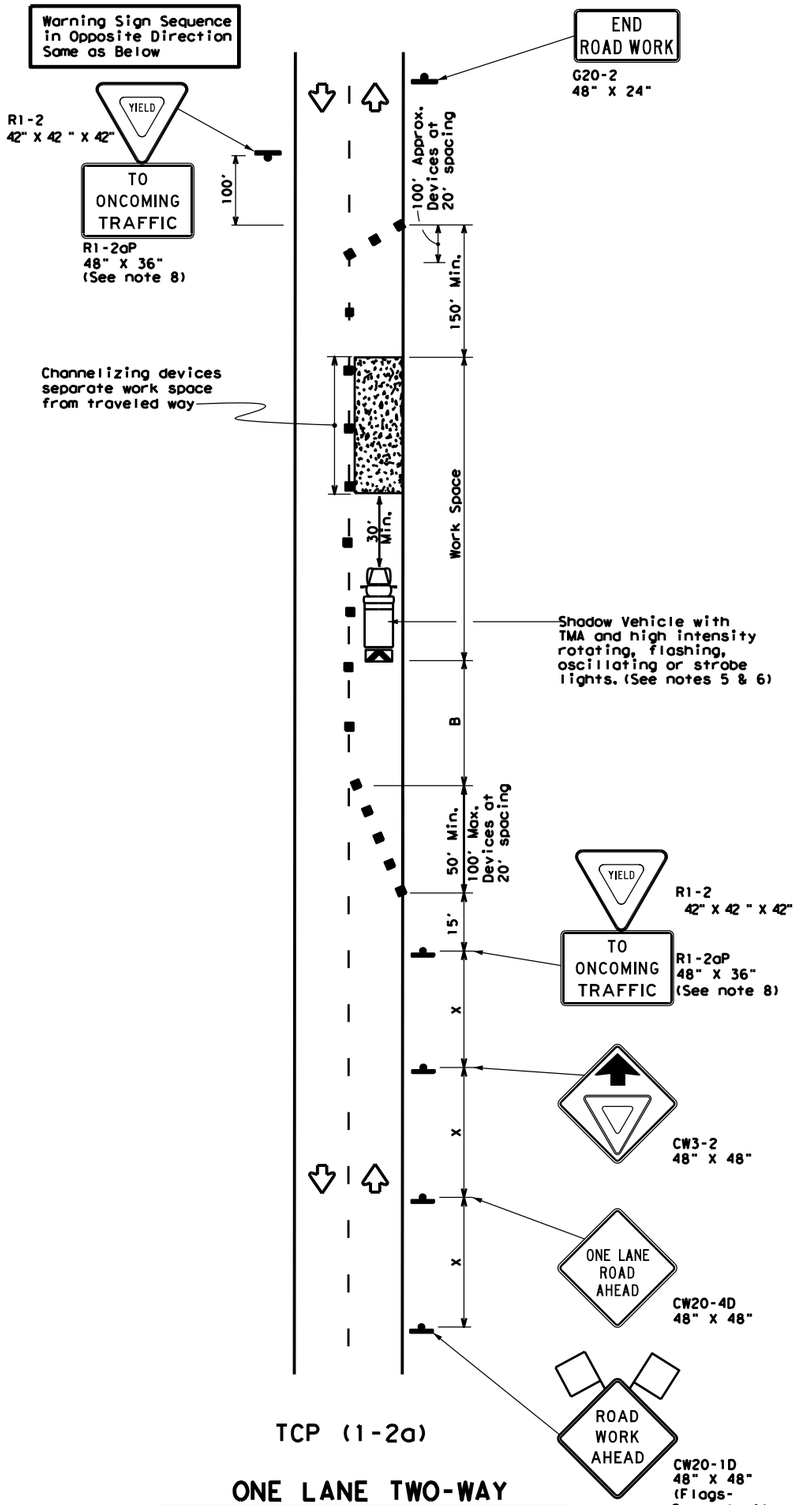
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(1-1)-18

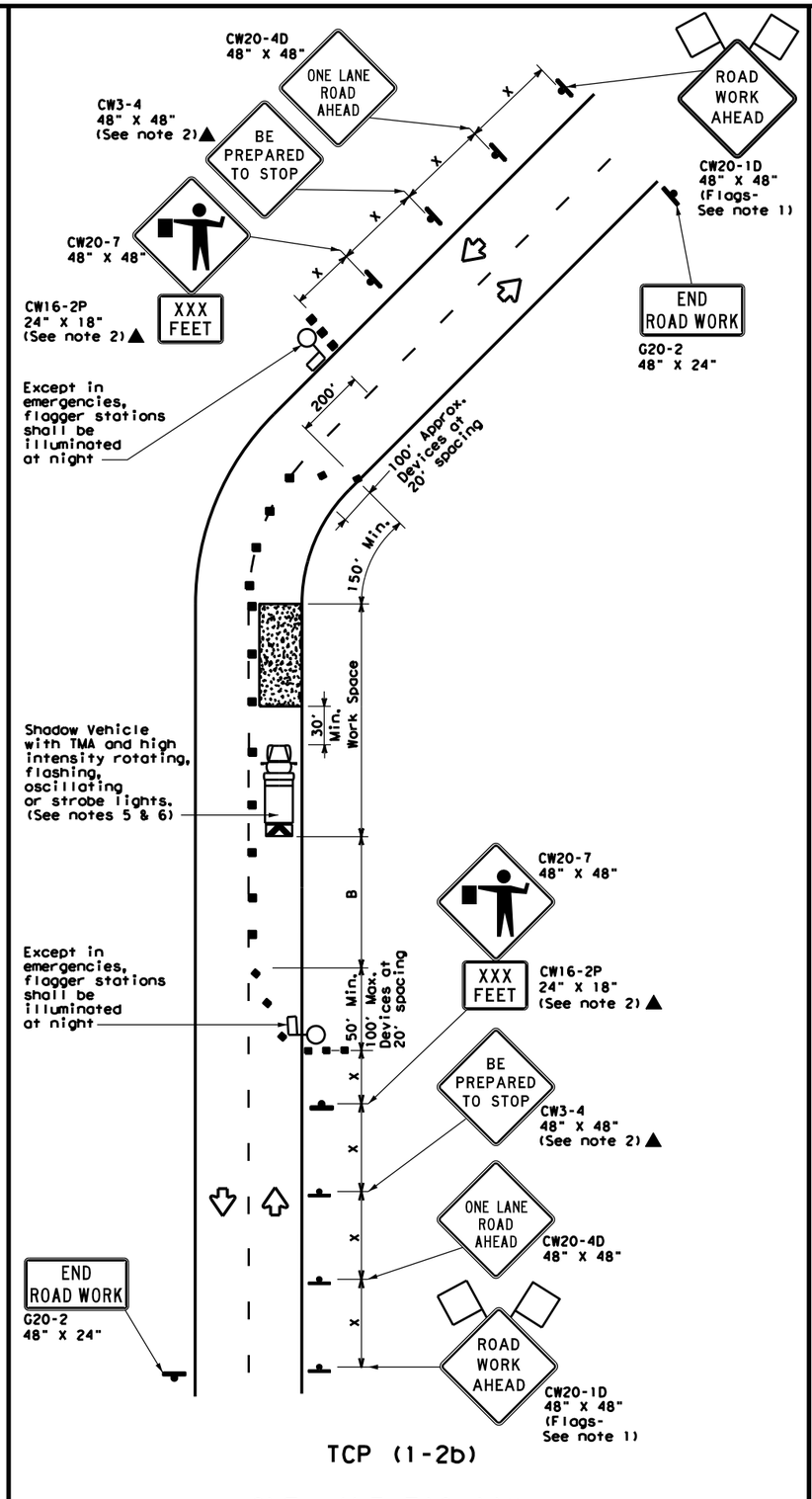
FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		54

DATE:
FILE:



TCP (1-2a)

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation

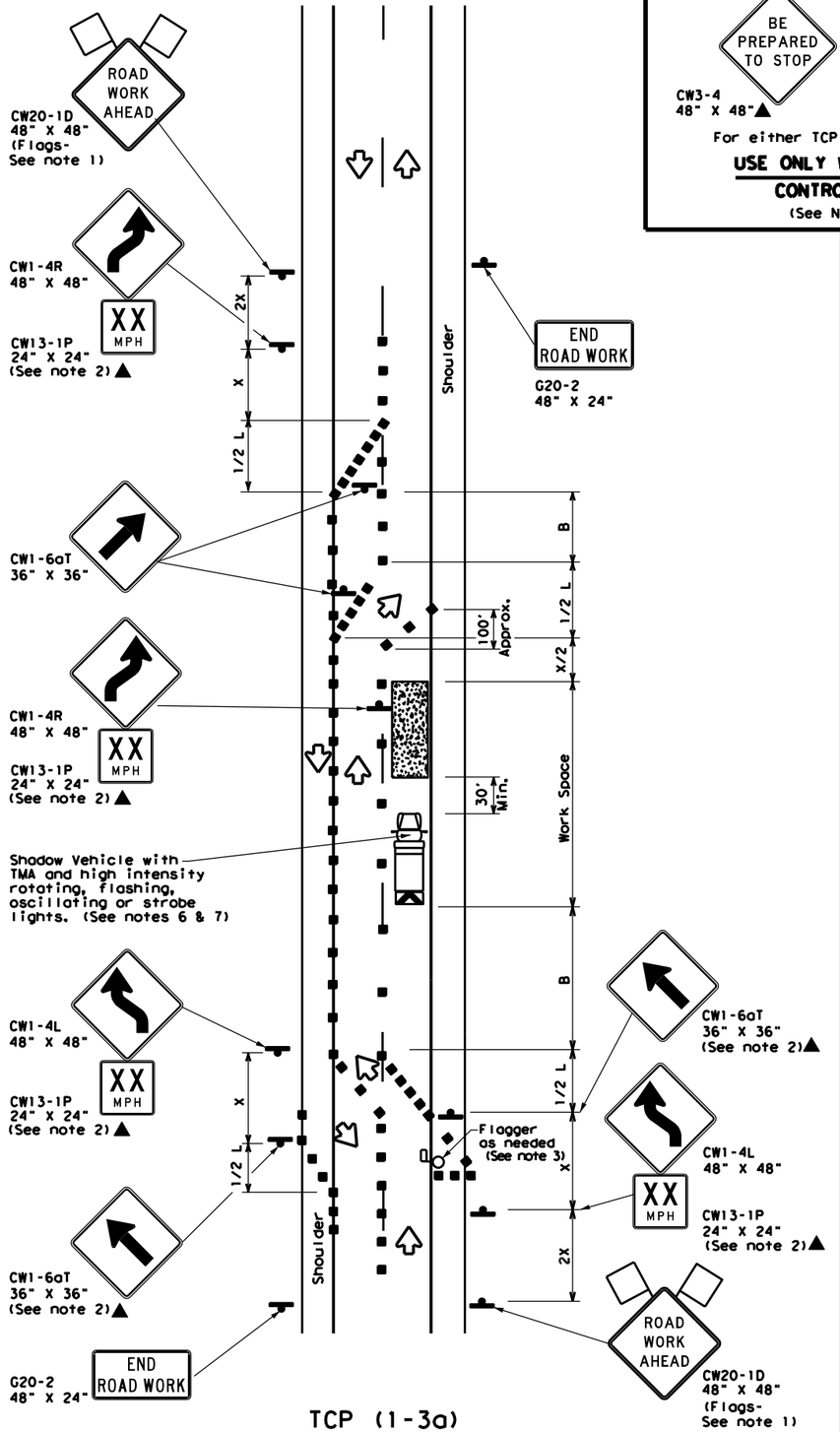
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(1-2)-18

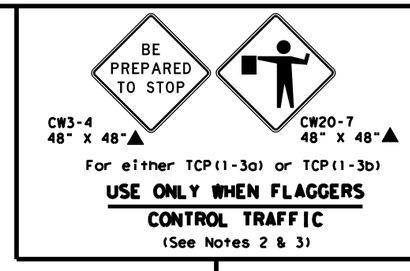
FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		55

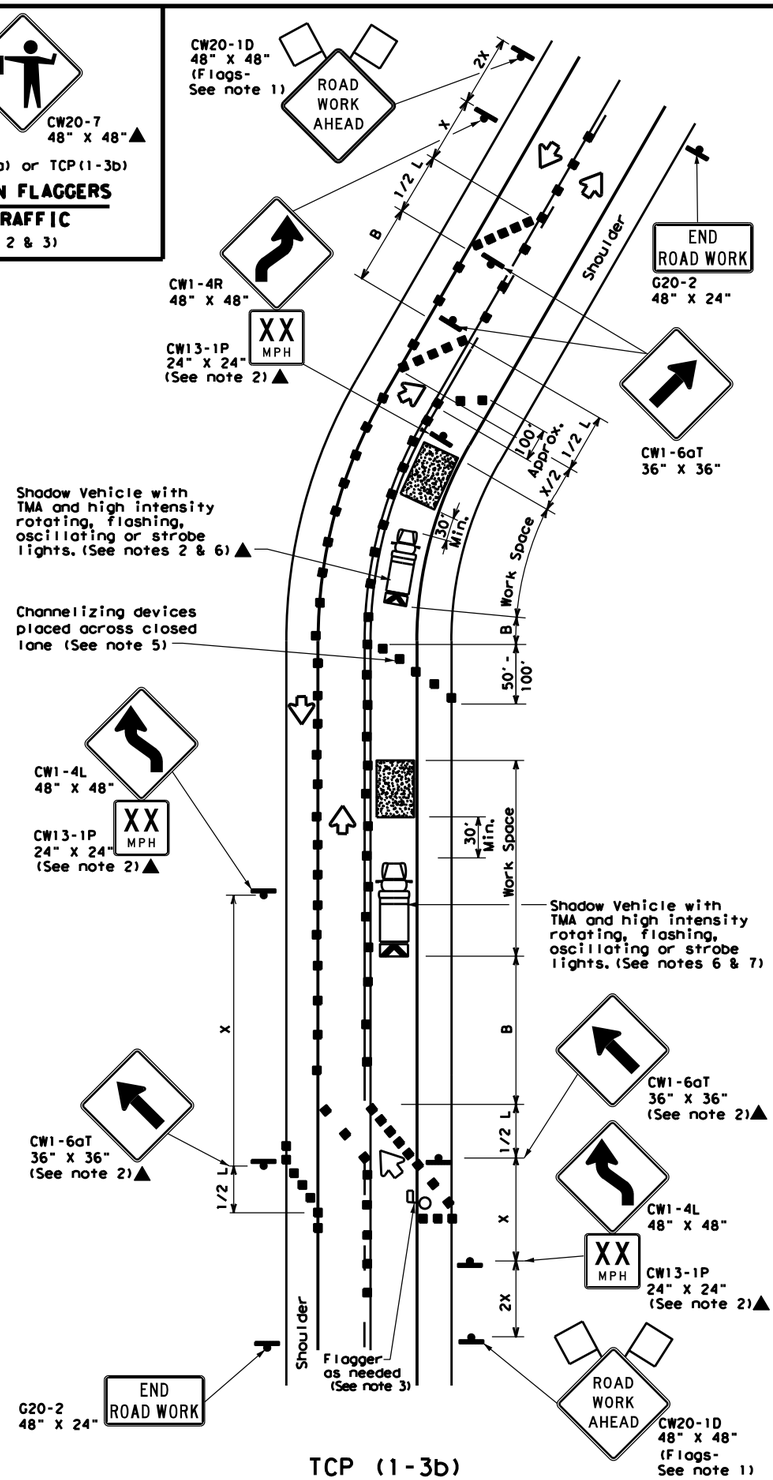
DATE:
FILE:



TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW





TCP (1-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

Texas Department of Transportation

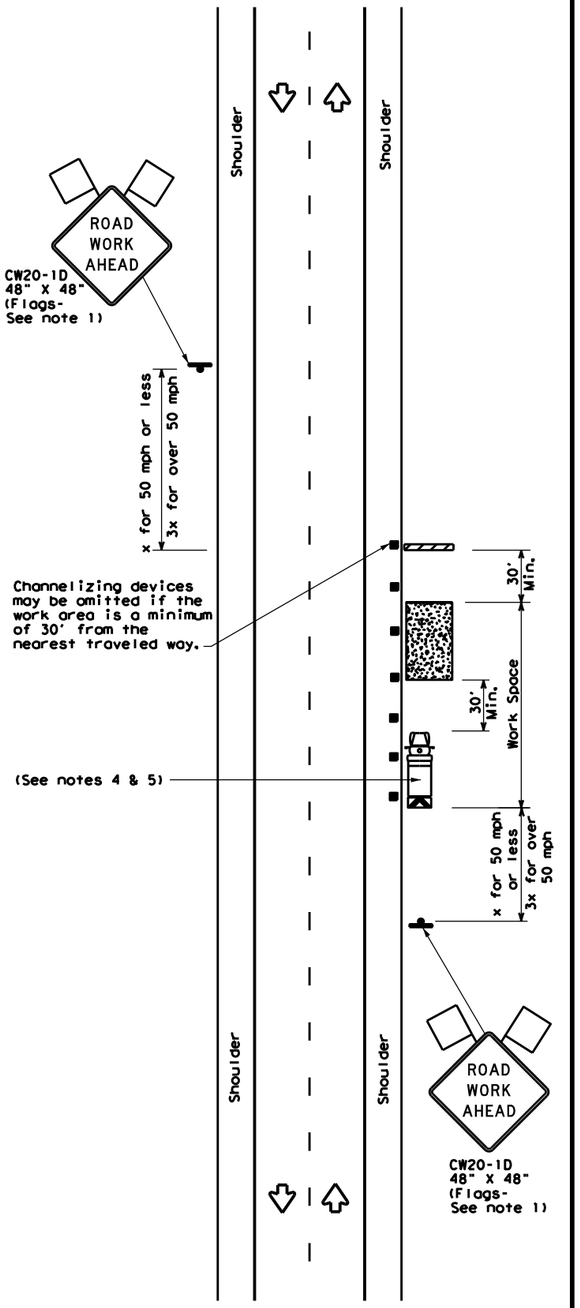
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

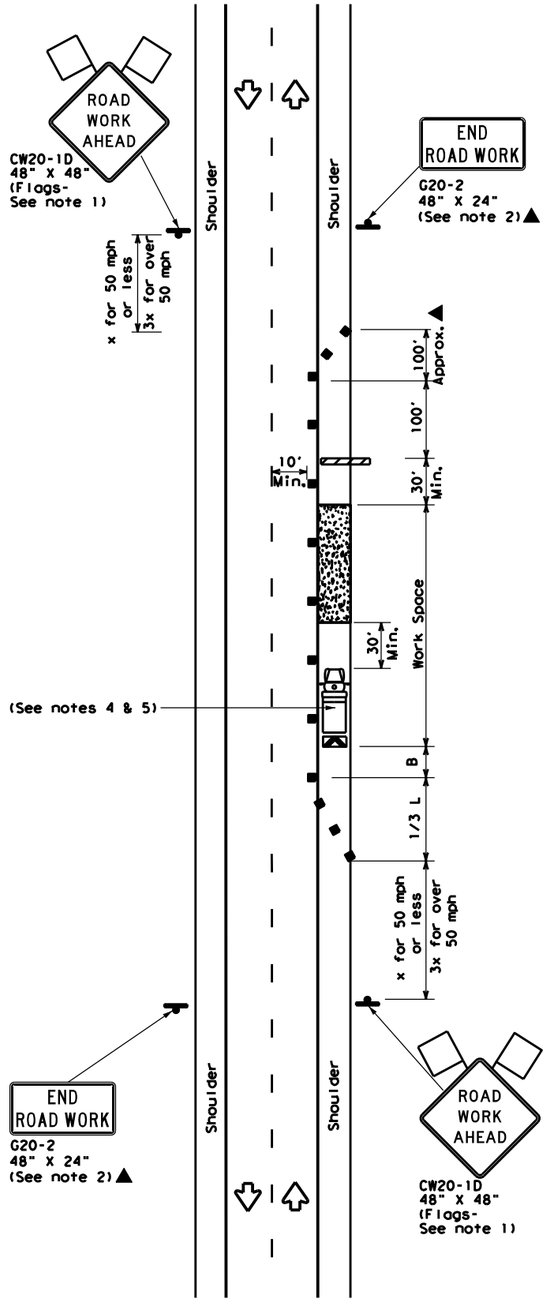
FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	ELP	EL PASO		56
1-97 2-18				

DATE:
FILE:



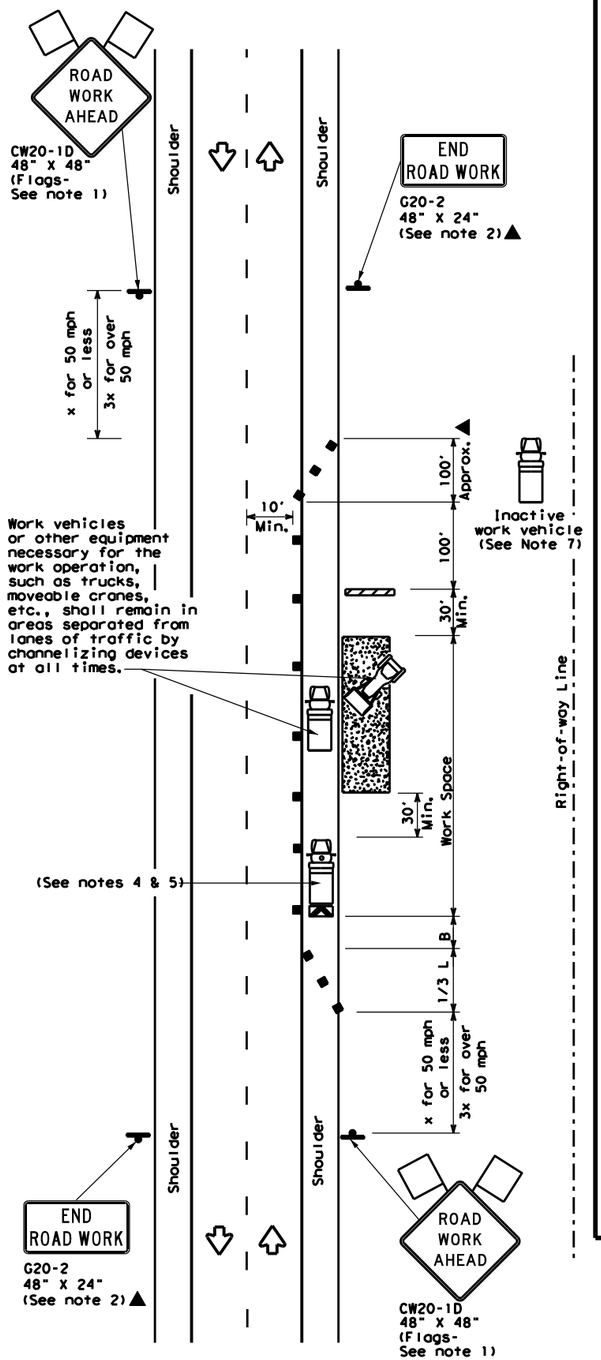
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	ELP	EL PASO		57
1-97 2-18				

DATE:
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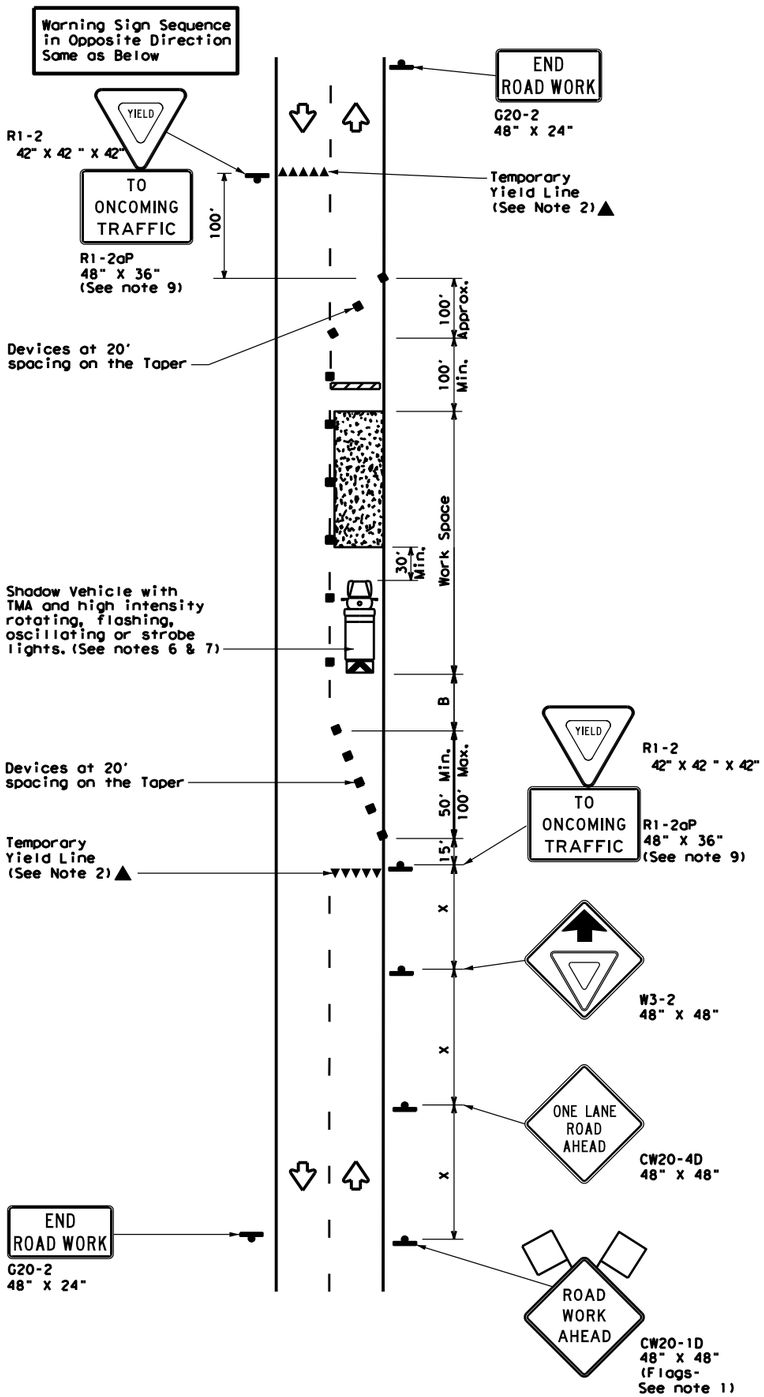


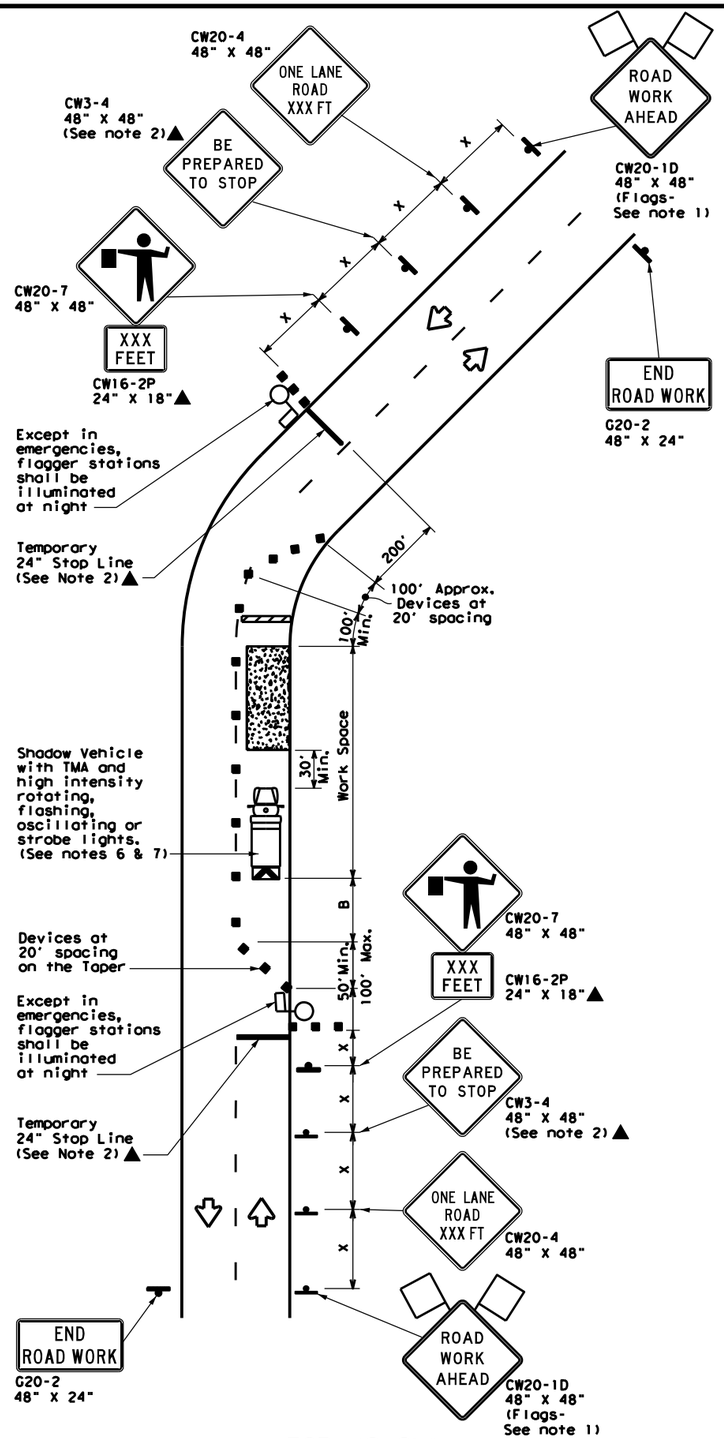
TCP (2-2a)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See Note 9)



TCP (2-2b)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade	■■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		58

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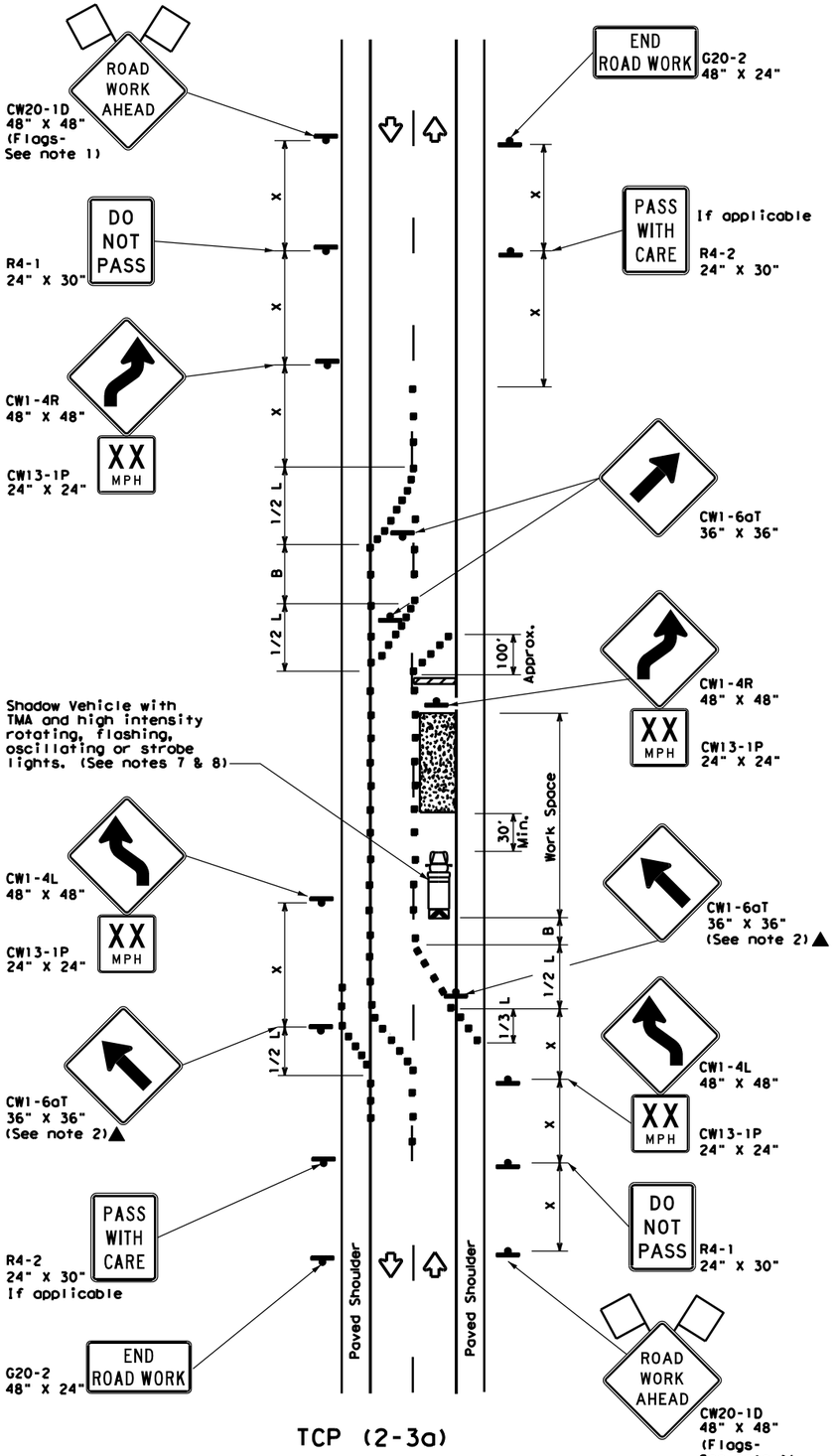
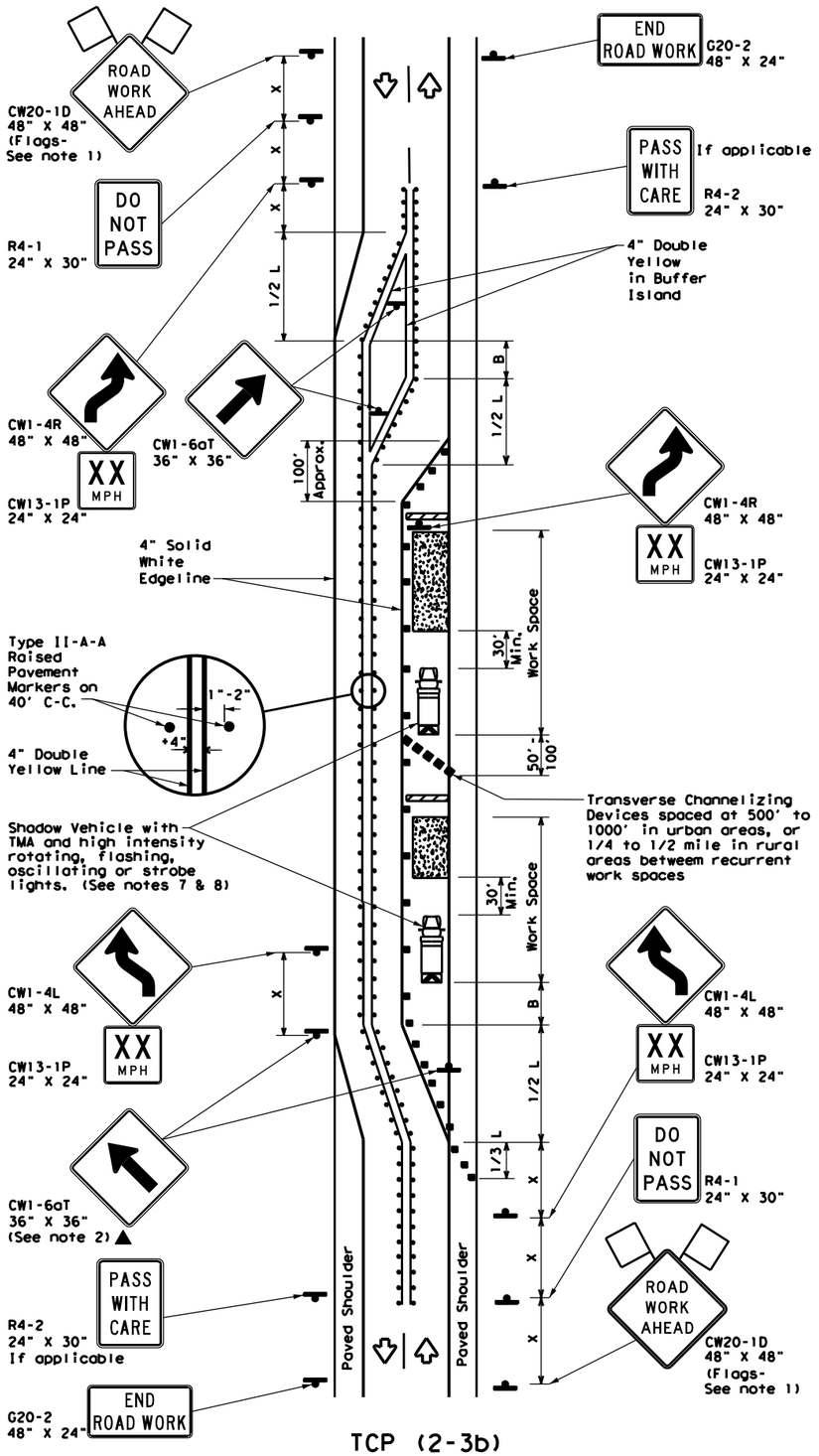
DATE:
FILE:



TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	• • • •	Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-18

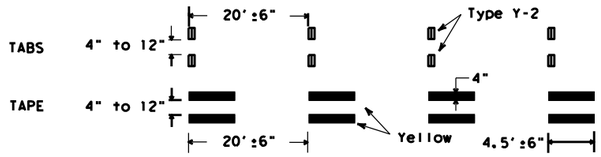
FILE: tcp(2-3)-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	ELP	EL PASO		59
4-98 2-18				

DATE:
FILE:

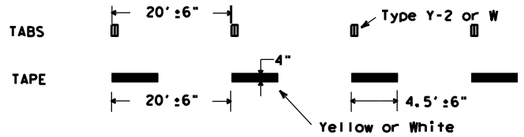
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

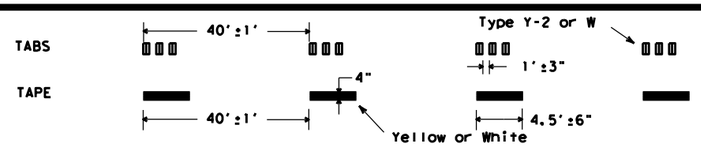


SINGLE NO-PASSING LINE or CHANNELIZATION LINE



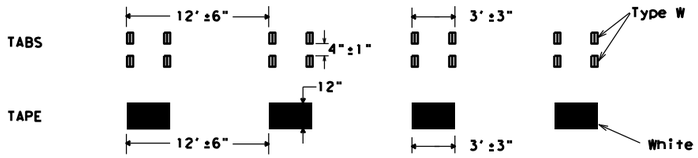
BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

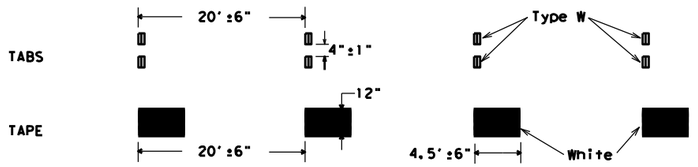


WIDE DOTTED LINES

(FOR LANE DROP LINES)



WIDE GORE MARKINGS



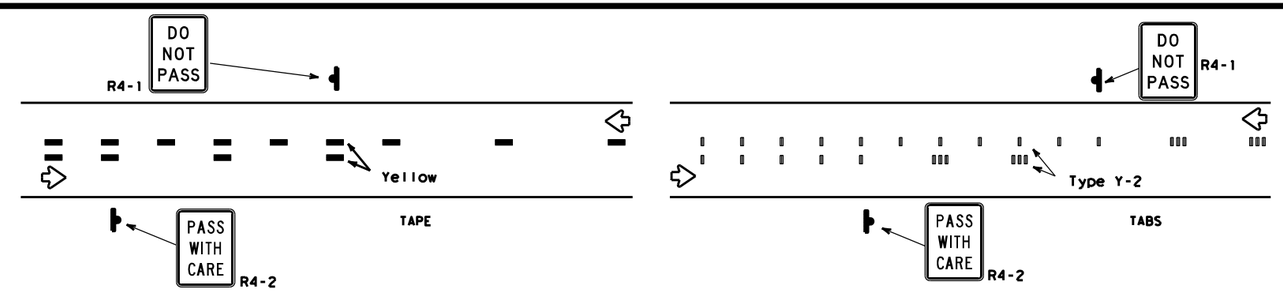
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

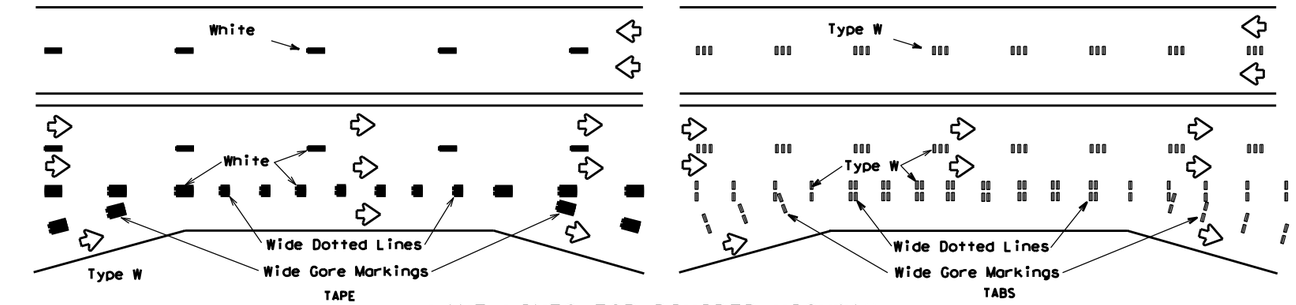
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

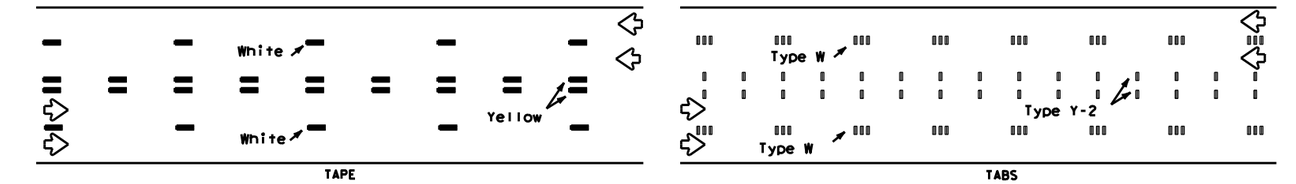
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



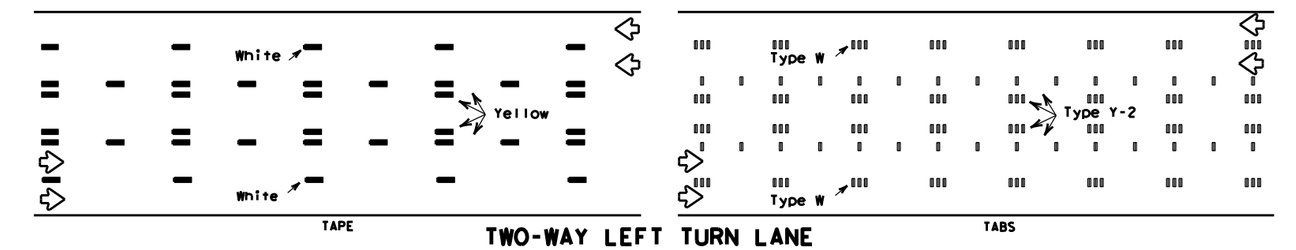
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



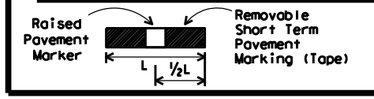
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
   http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

FILE:	wzstpm-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
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1-97		DIST	COUNTY		SHEET NO.
3-03		ELP	EL PASO		60
7-13					

DATE:
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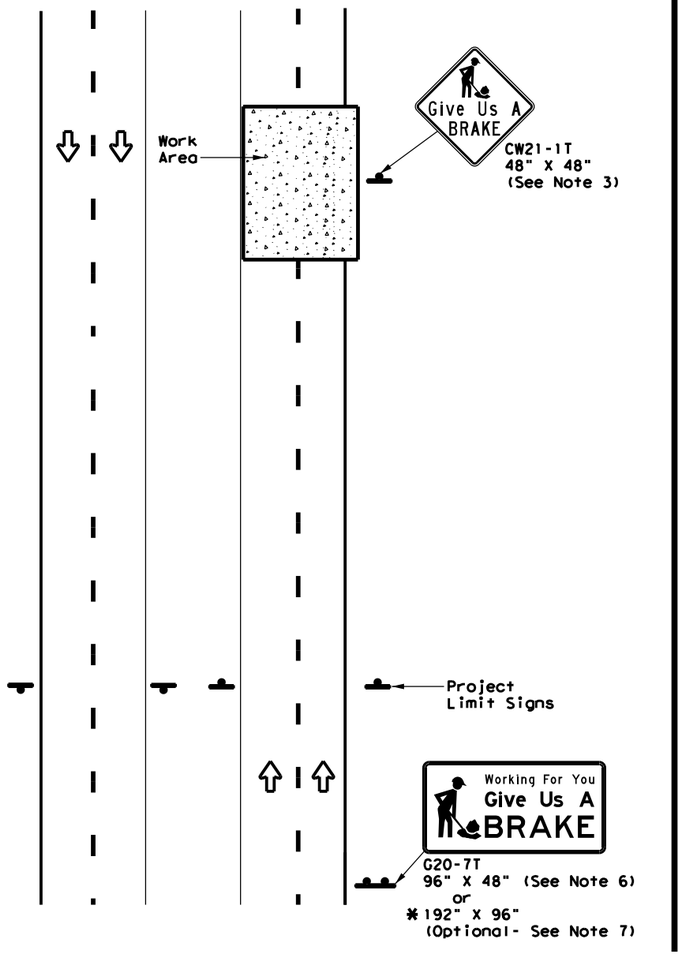
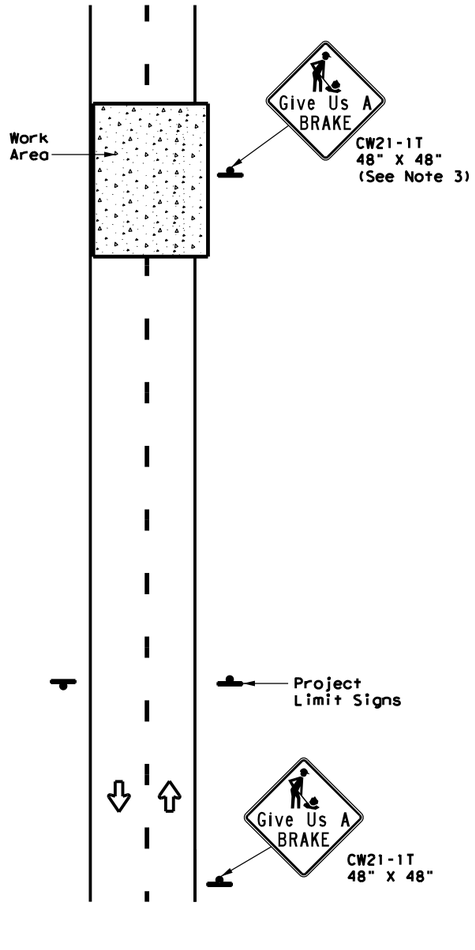


DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

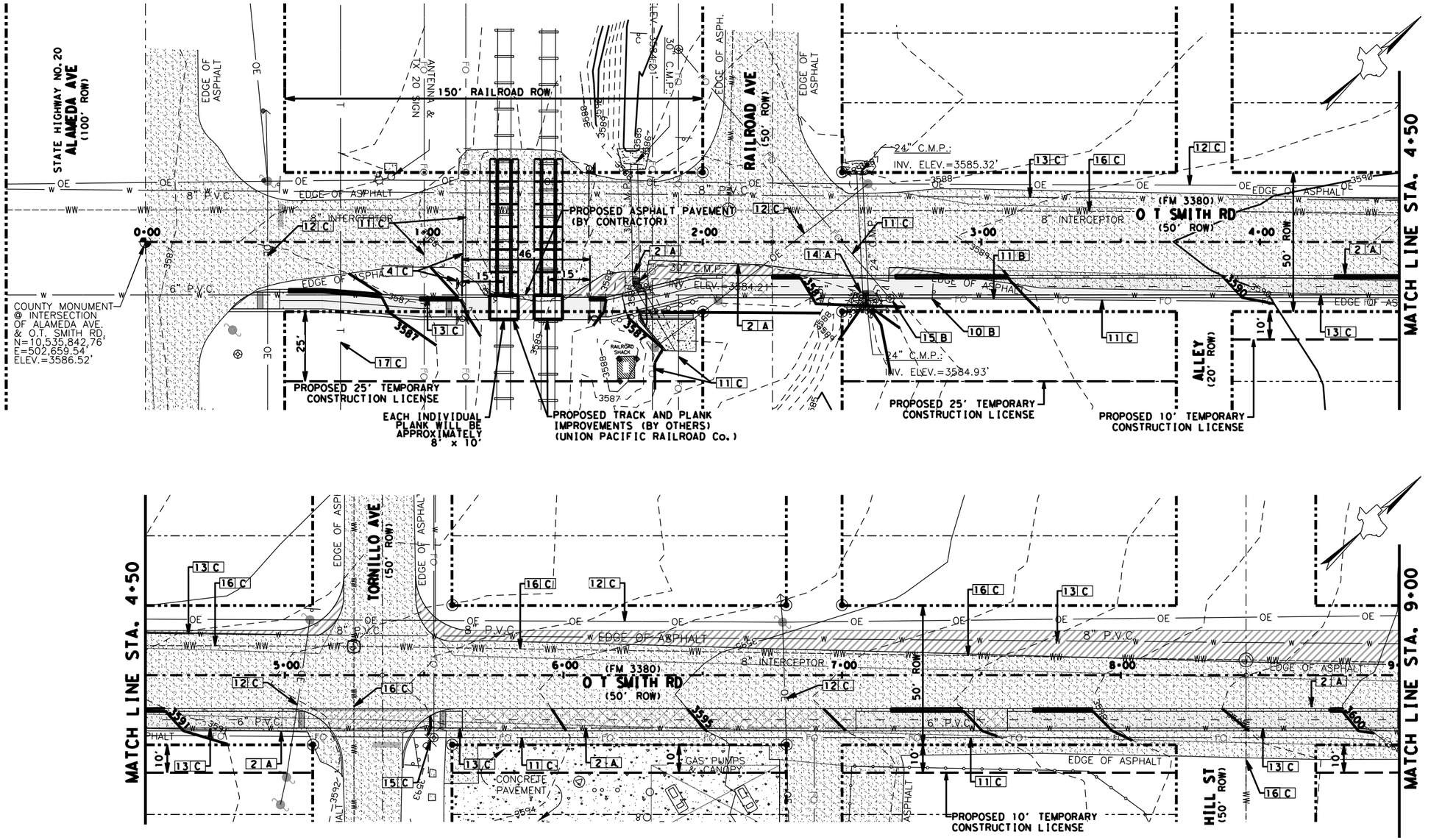
Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	ELP	EL PASO		61



GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

DEMOLITION KEYED NOTES

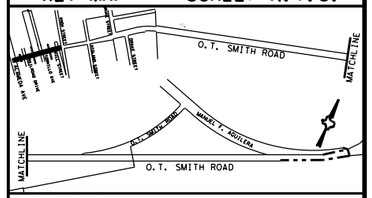
00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CROSSING SIGNAL AND GATE
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX
16	EXISTING SEWER LINE
17	EXISTING COMMUNICATION LINE

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9
105	6005	REMOVING STAB BASE AND ASPH PAV (3")	SY	740
496	6006	REMOV STR (HEADWALL)	EA	2
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1500

KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

THE STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

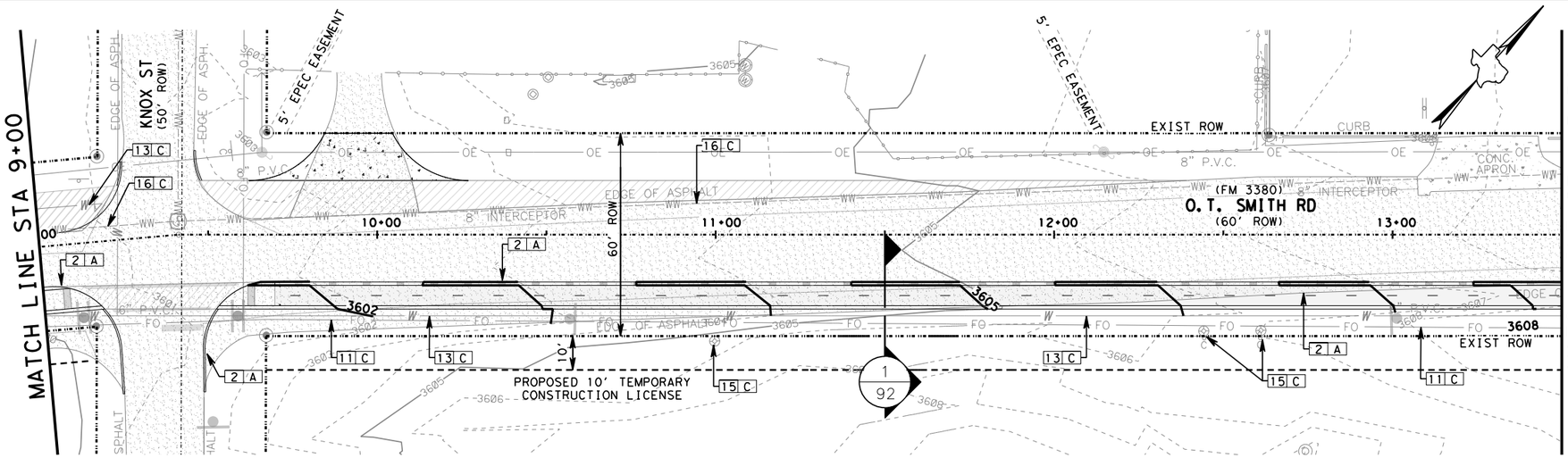
TORNILLO SHARED USE PATH

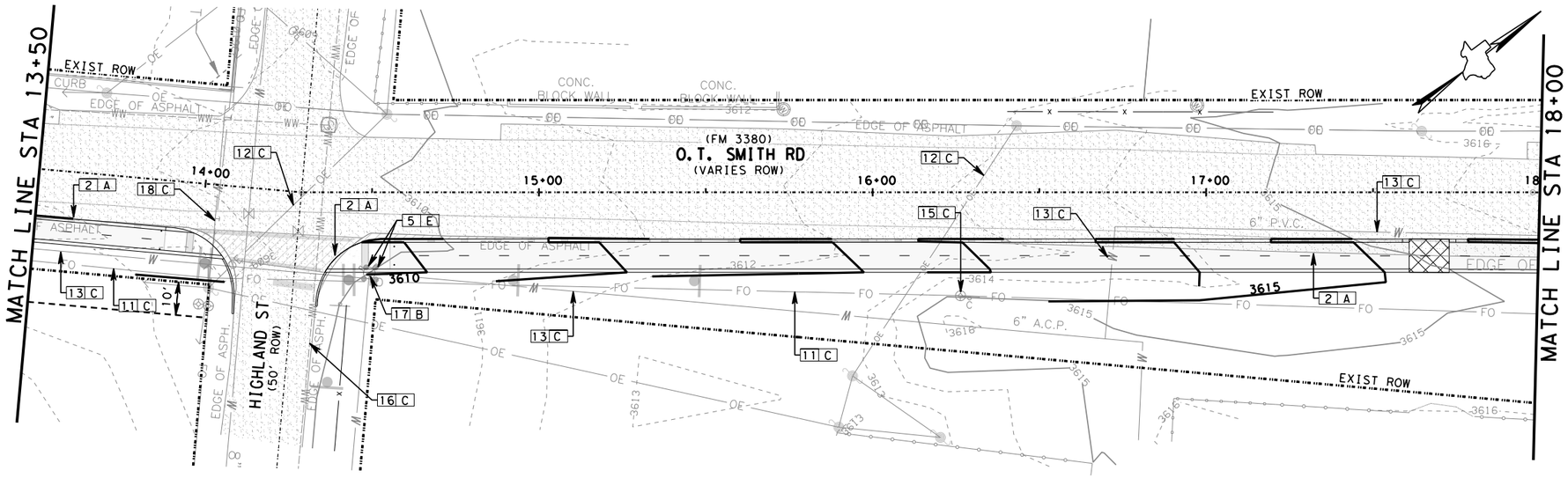
DEMOLITION & GRADING PLAN

STA 0+00 TO STA 9+00

SHEET 1 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		62
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





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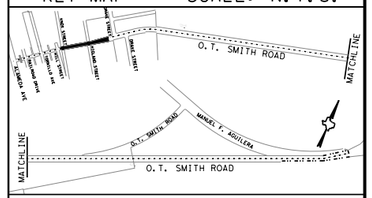


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX
16	EXISTING SEWER LINE
17	EXISTING FIRE HYDRANT
18	EXISTING COMMUNICATION LINE

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9
105	6005	REMOVING STAB BASE AND ASPH PAV (3")	SY	500
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1000

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

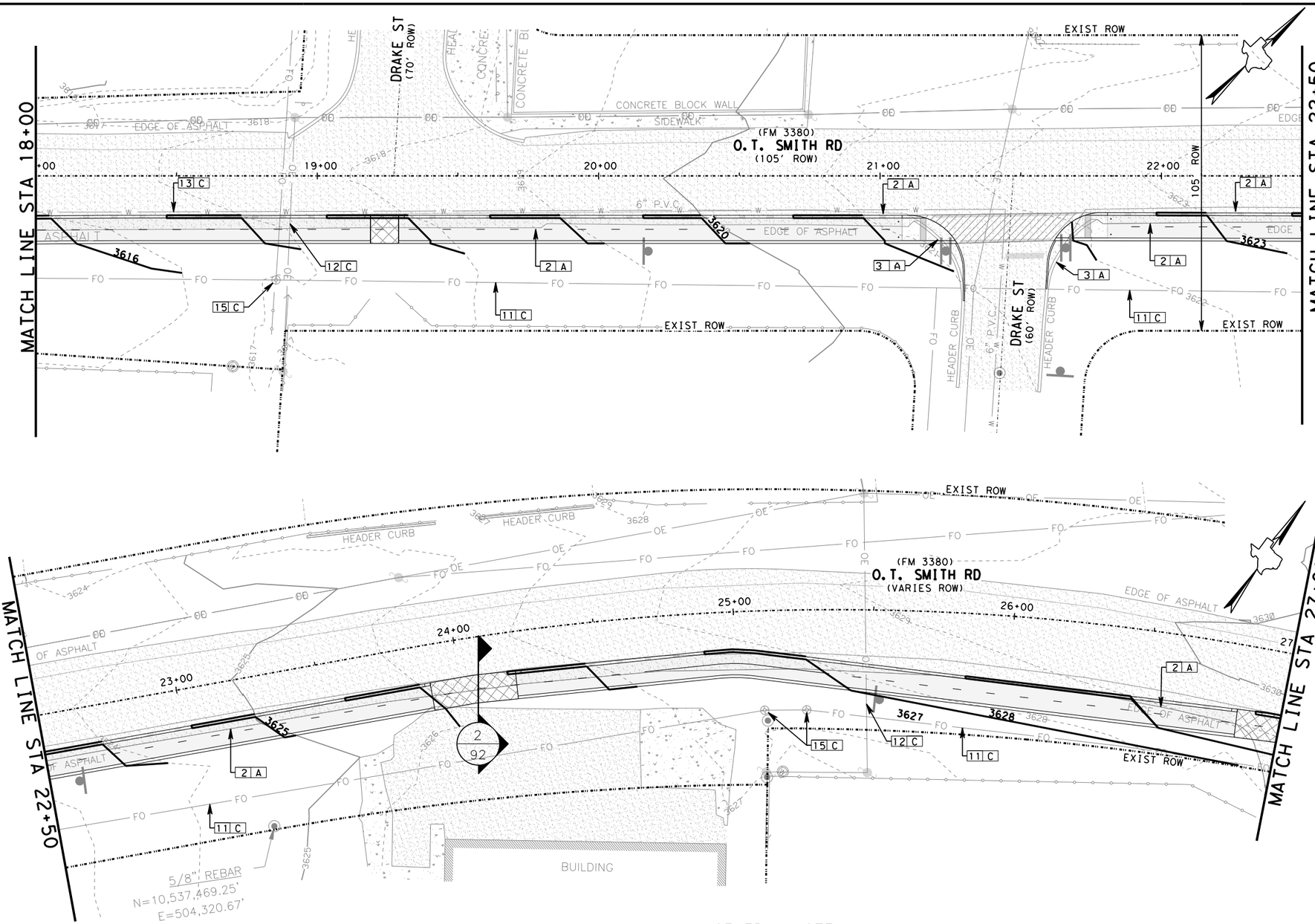
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 9+00 TO STA 18+00

SHEET 2 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		63
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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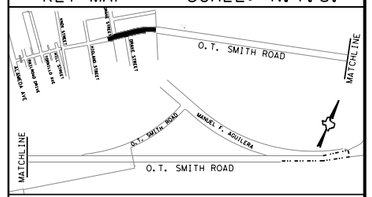


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9
104	6021	REMOVING CONC (CURB)	LF	65
105	6005	REMOVING STAB BASE AND ASPH PAV (3")	SY	400
110	6001	EXCAVATION (ROADWAY)	CY	1350

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

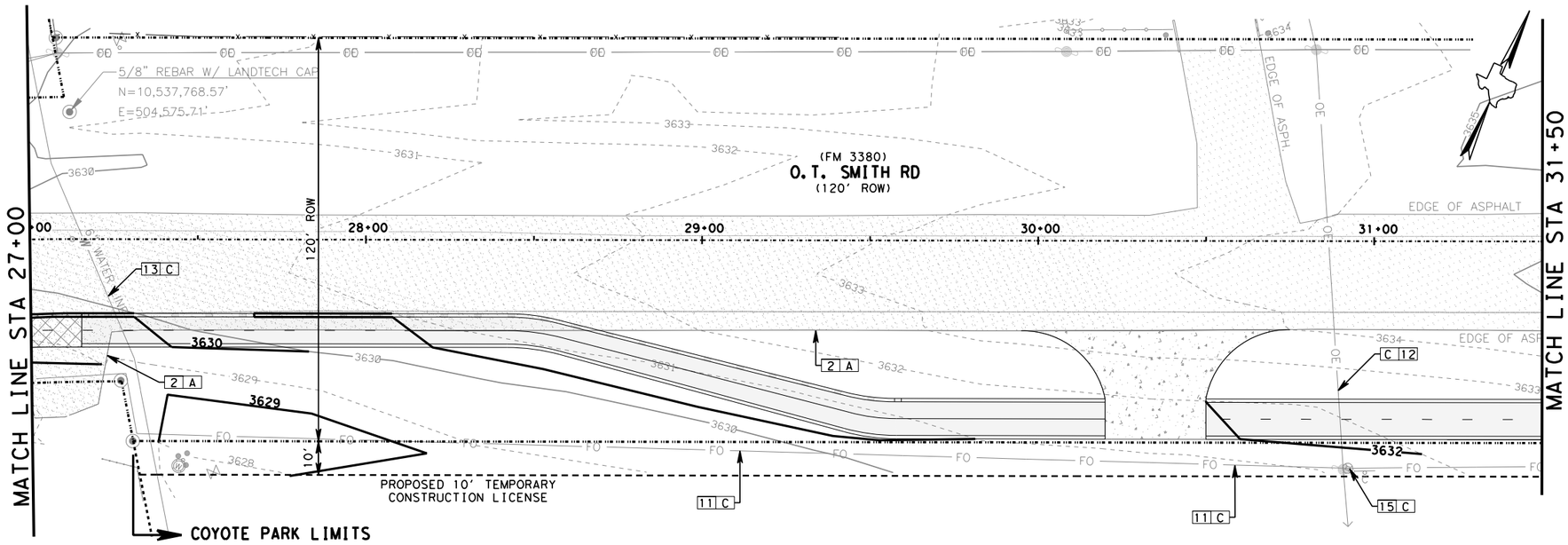
TORNILLO SHARED USE PATH

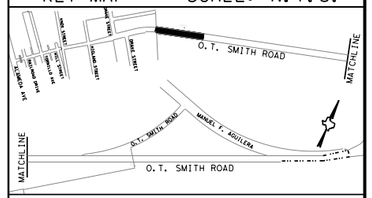
DEMOLITION & GRADING PLAN

STA 18+00 TO STA 27+00

SHEET 3 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		64
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9
105	6035	REMOVING STAB BASE AND ASPH PAV (3")	SY	113

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

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Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

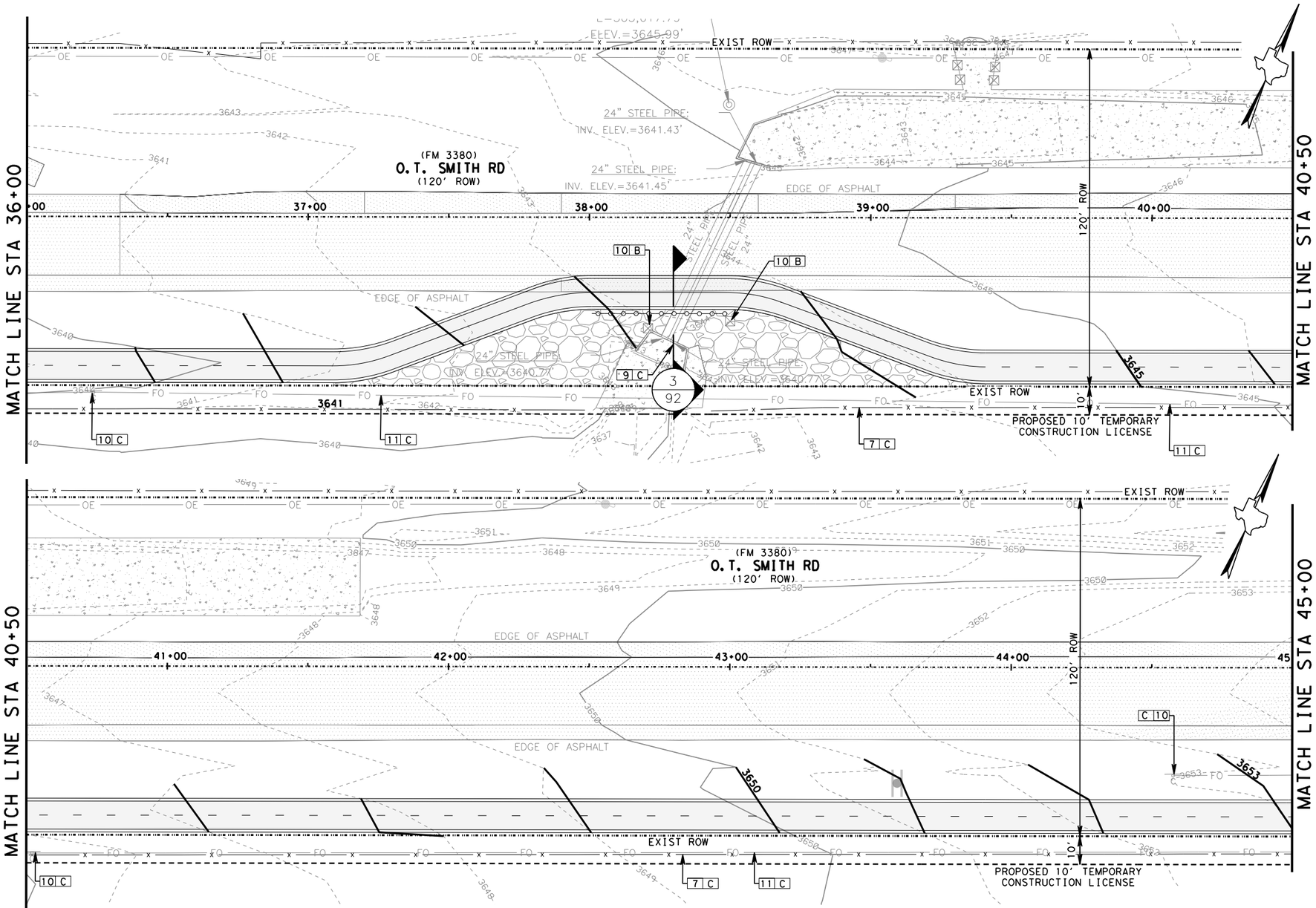
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 27+00 TO STA 36+00

SHEET 4 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		65
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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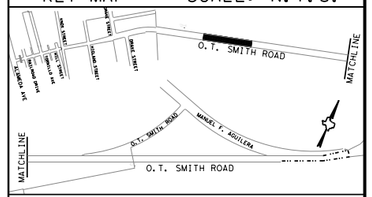

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9
105	6005	REMOVING STAB BASE AND ASPH PAV (3")	SY	55

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

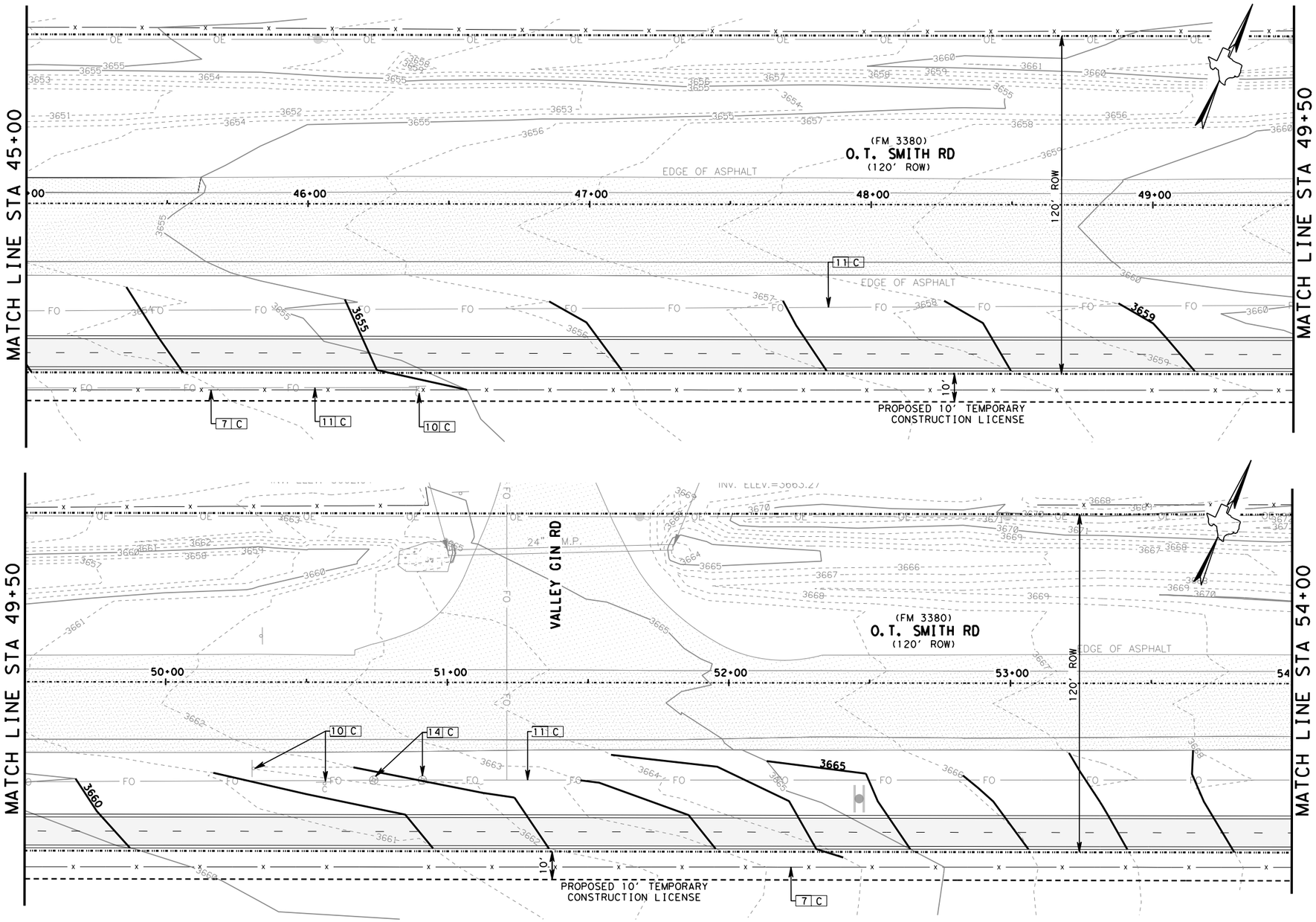
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 36+00 TO STA 45+00

SHEET 5 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		66
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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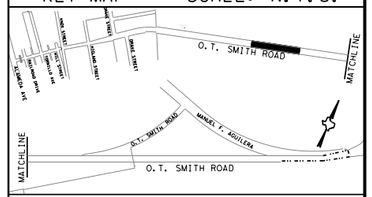

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

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Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

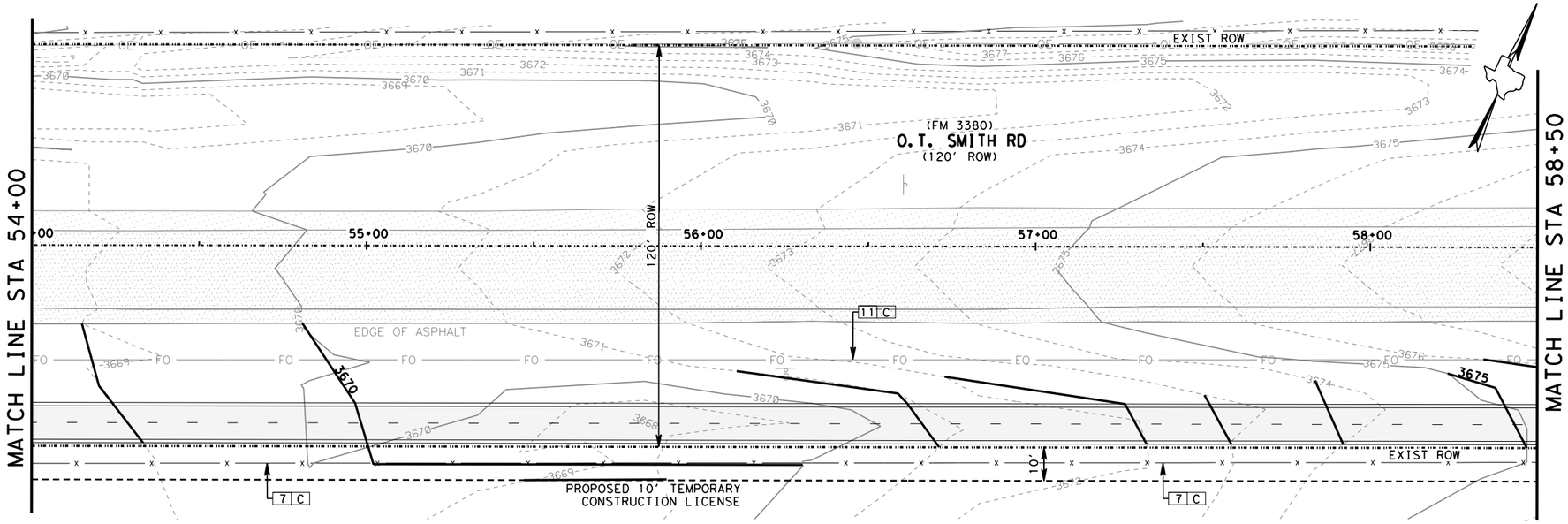
TORNILLO SHARED USE PATH

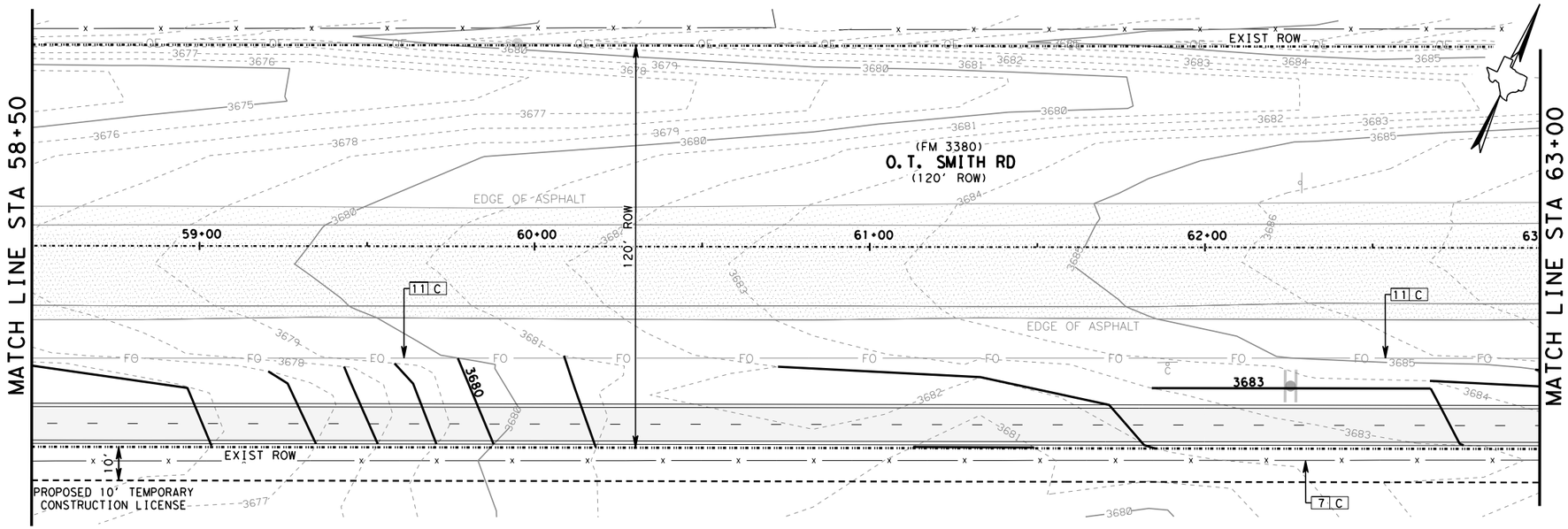
DEMOLITION & GRADING PLAN

STA 45+00 TO STA 54+00

SHEET 6 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		67
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





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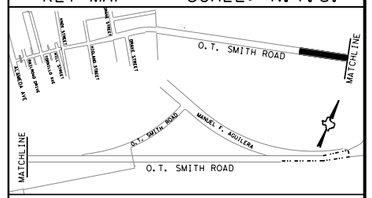

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

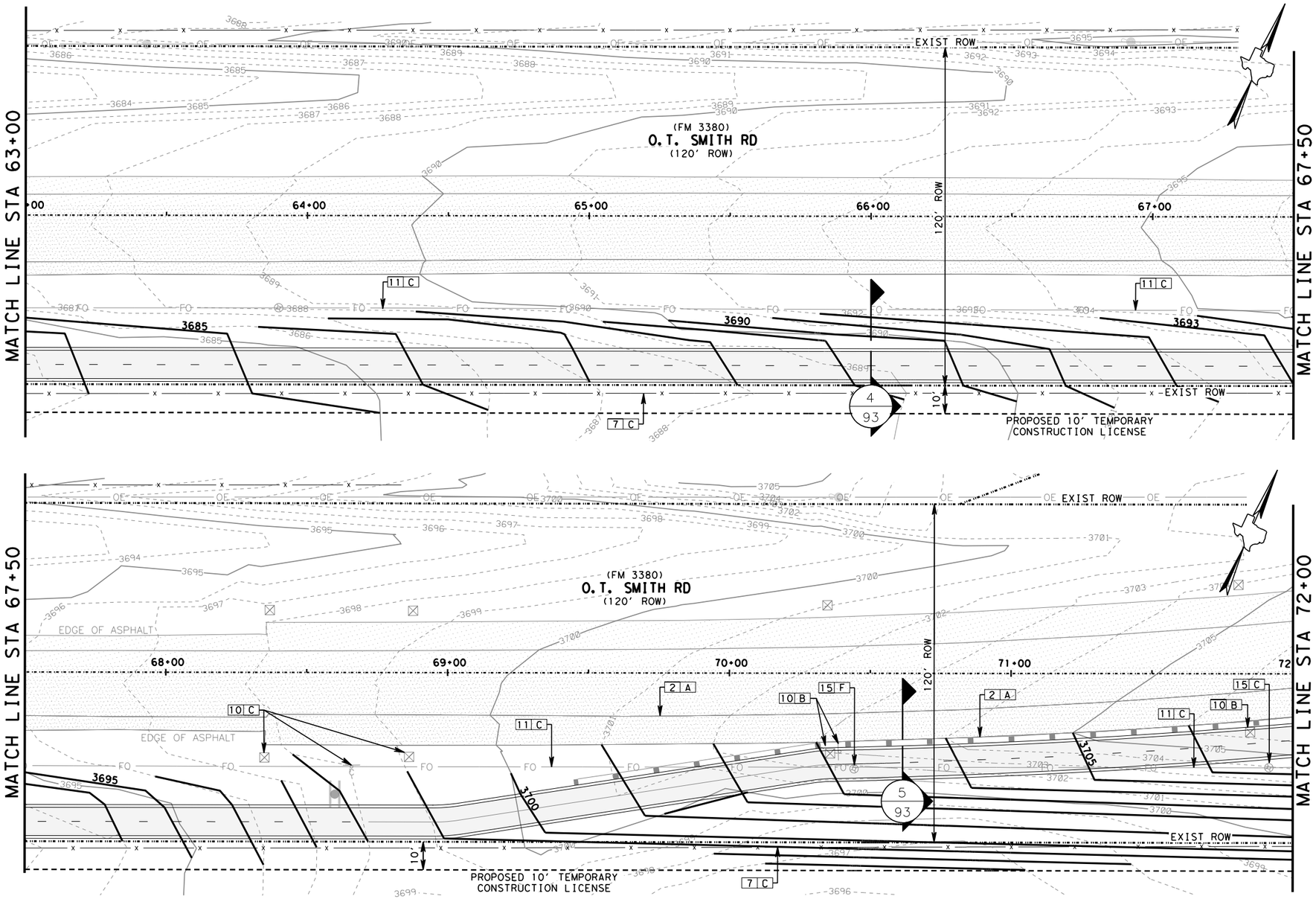
DEMOLITION & GRADING PLAN

STA 54+00 TO STA 63+00

SHEET 7 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	68

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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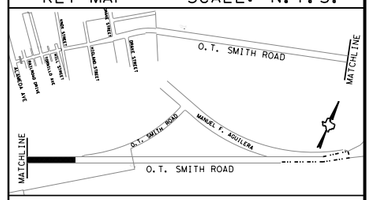


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE
F	PROTECT AND ADJUST, COORDINATE WITH UTILITY COMPANY

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

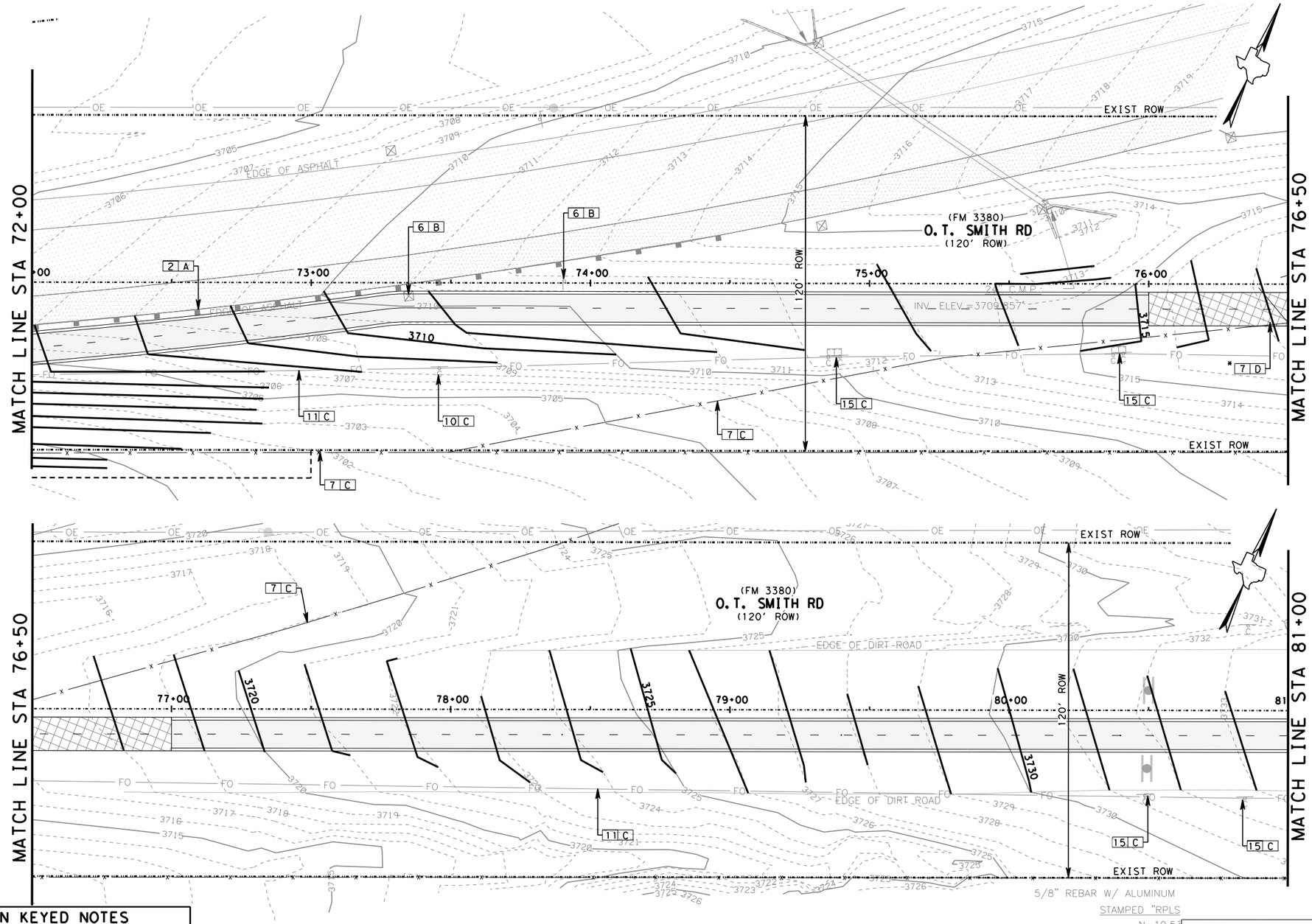
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 63+00 TO STA 72+00

SHEET 8 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		69
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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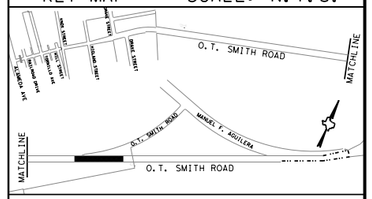


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

*NOTE: BEFORE REMOVAL COORDINATE WITH PROPERTY OWNER
PROPERTY ID: 162430

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

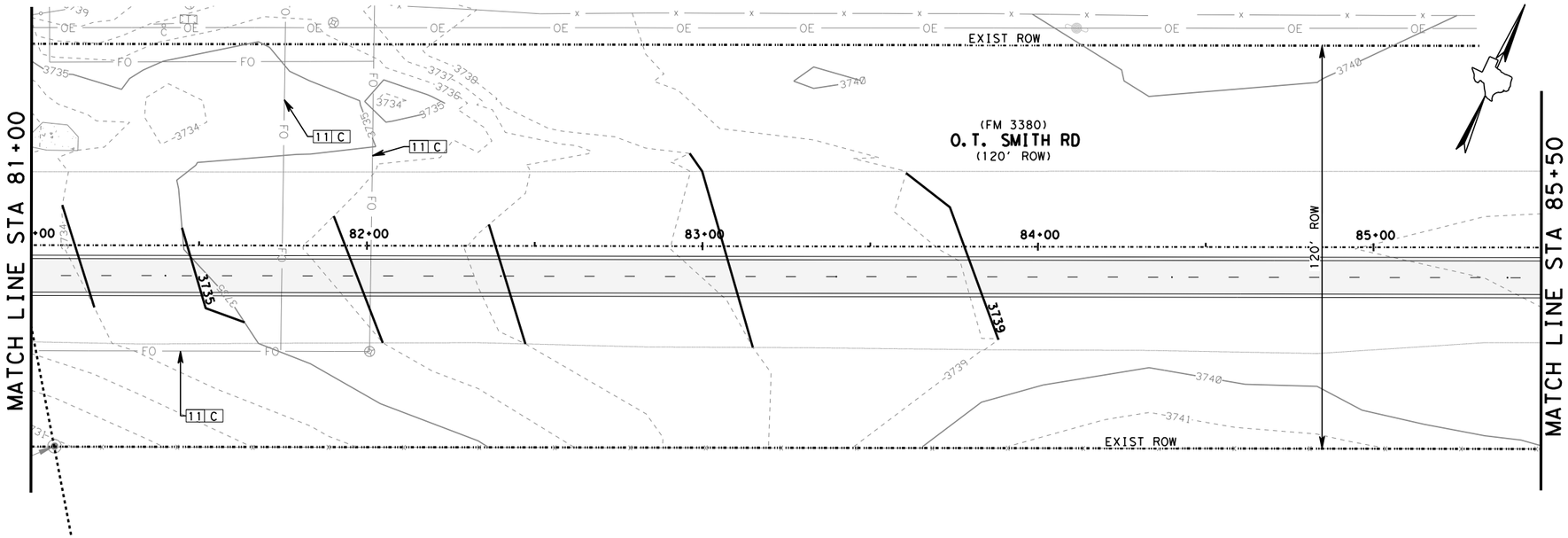
TORNILLO SHARED USE PATH

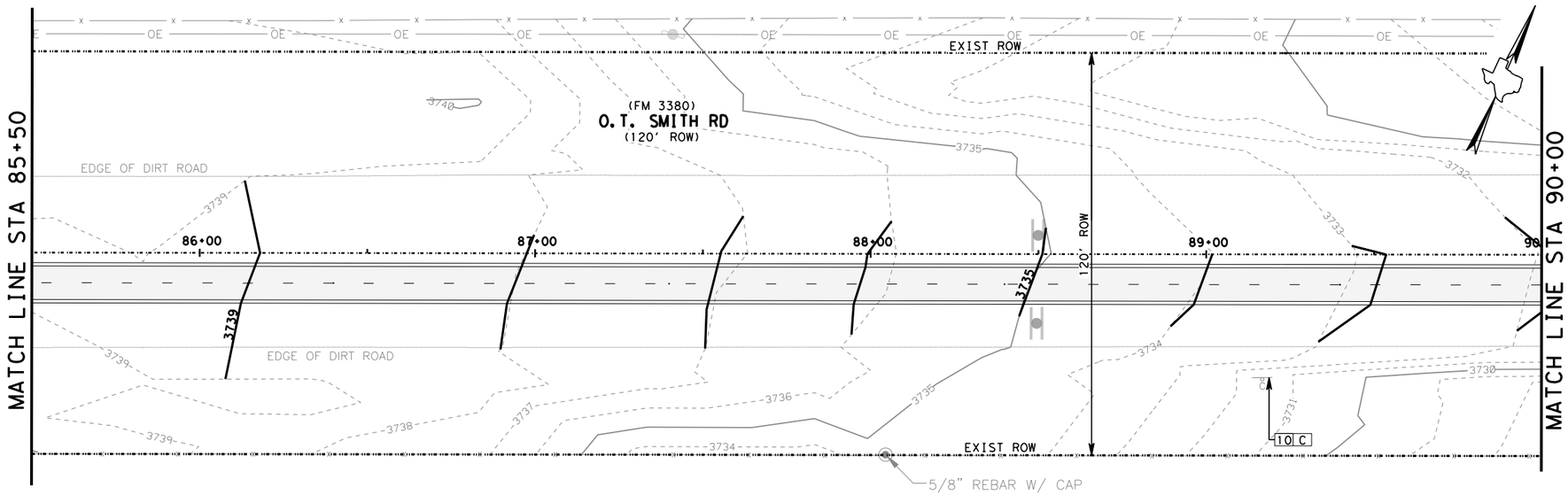
DEMOLITION & GRADING PLAN

STA 72+00 TO STA 81+00

SHEET 9 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		70
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





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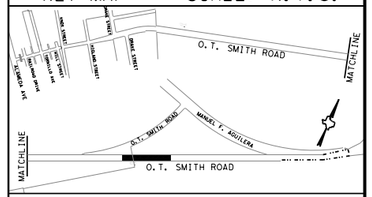


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

OO	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

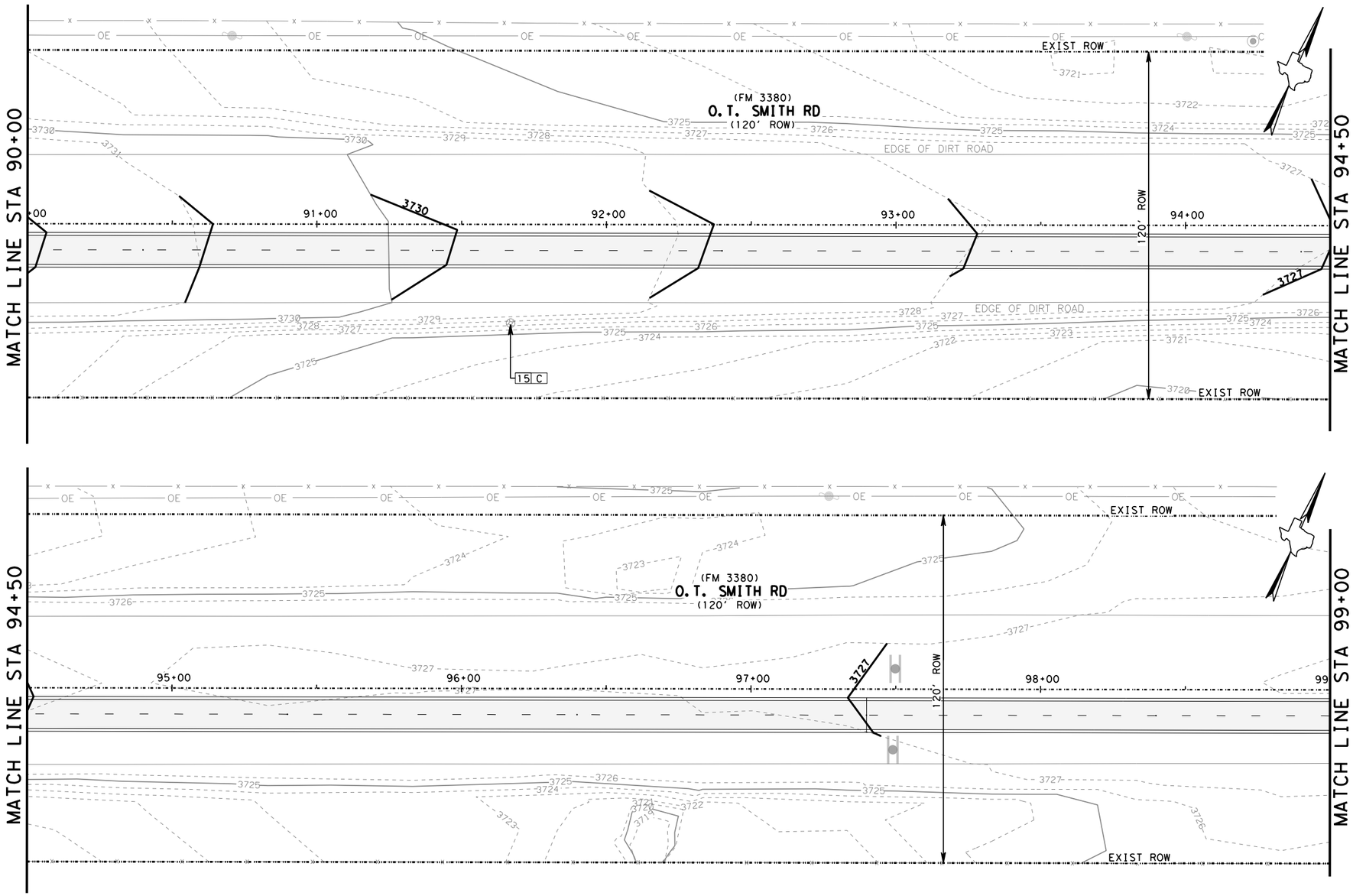
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 81+00 TO STA 90+00

SHEET 10 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		71
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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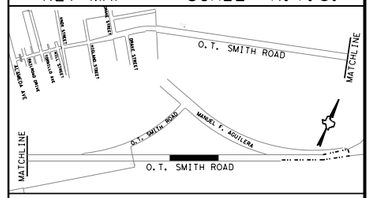

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

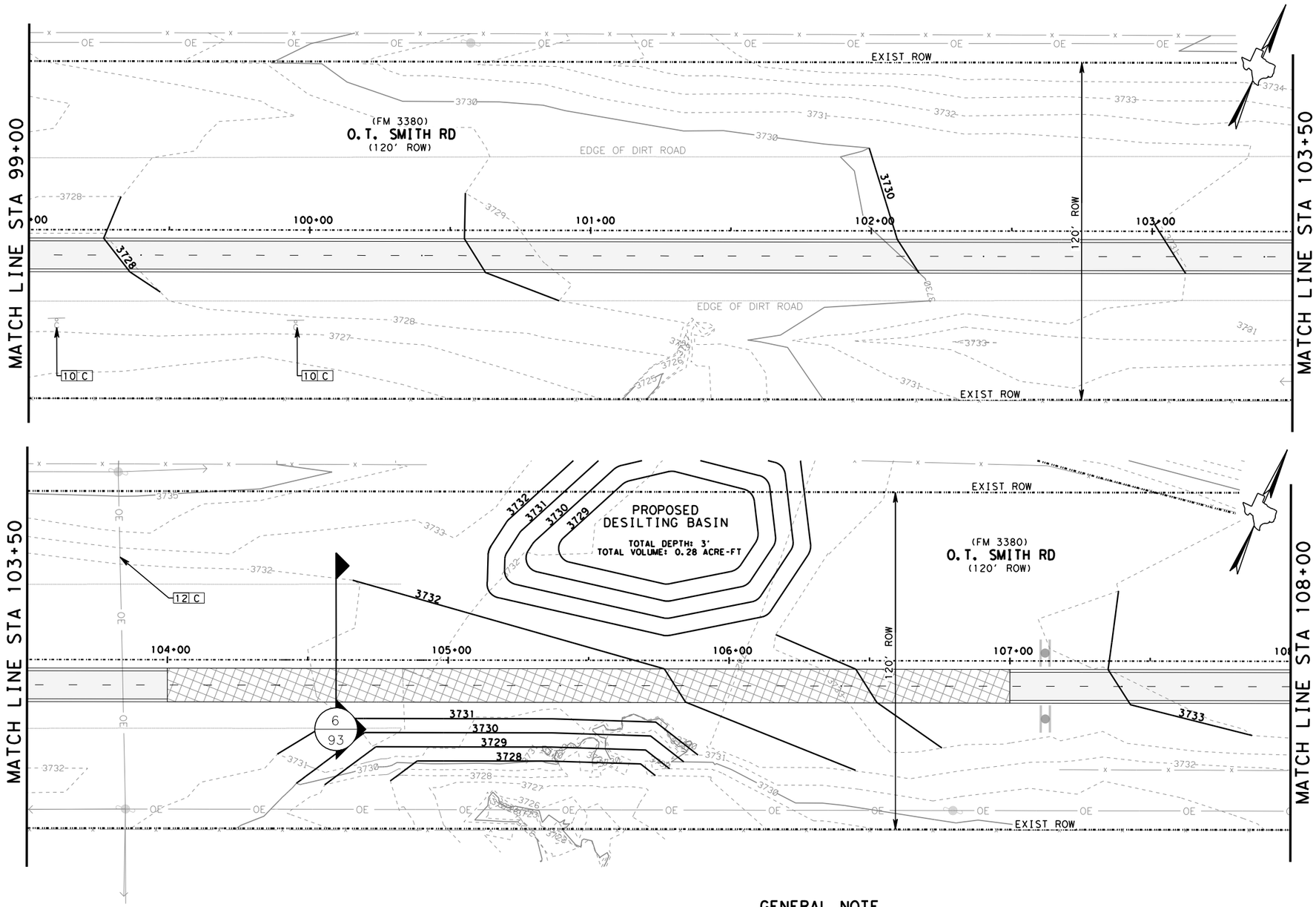
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 90+00 TO STA 99+00

SHEET 11 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		72
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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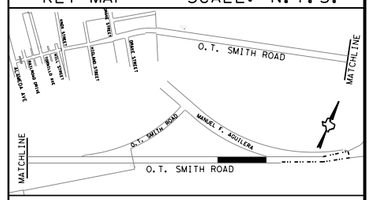

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

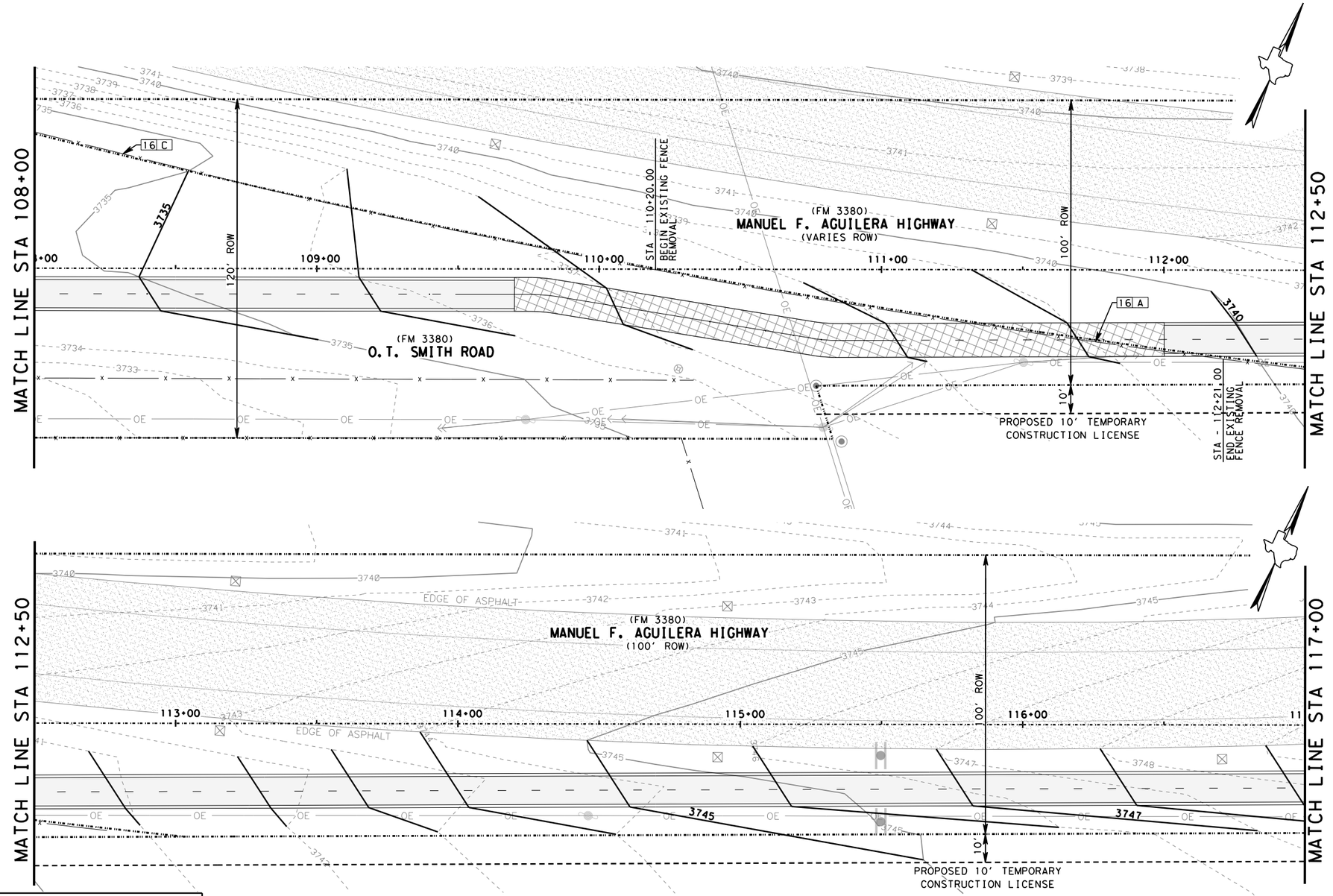
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 99+00 TO STA 103+50

SHEET 12 OF 14

FED.RD. DIV.NO:	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		73
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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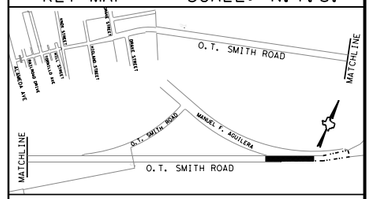

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

DEMOLITION KEYED NOTES

00	
1	LIMITS OF DEMOLITION, SAW-CUT EXISTING PAVEMENT/SIDEWALK
2	EXISTING ASPHALT PAVEMENT
3	EXISTING CURB
4	EXISTING CONCRETE DRIVEWAY
5	EXISTING POST/BOLLARD
6	EXISTING TRAFFIC SIGN
7	EXISTING CHAIN LINK FENCE/GATE
8	EXISTING CONCRETE APRON
9	EXISTING HEADWALL
10	EXISTING SIGN
11	EXISTING FIBER OPTIC LINE
12	EXISTING OVERHEAD POWER LINE
13	EXISTING WATER LINE
14	EXISTING ROCKWALL
15	EXISTING UTILITY BOX
16	EXISTING FENCE

A	
A	COMPLETELY REMOVE AND PROPERLY DISPOSE OFF-SITE, AS REQUIRED FOR PROPOSED CONSTRUCTION
B	REMOVE AND RELOCATE
C	REMAIN UNDISTURBED (TO BE PROTECTED)
D	COMPLETELY REMOVE AS REQUIRED FOR PROPOSED CONSTRUCTION AND PROPERLY DISPOSE OFF-SITE
E	REMOVE AND REPLACE

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	9

GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

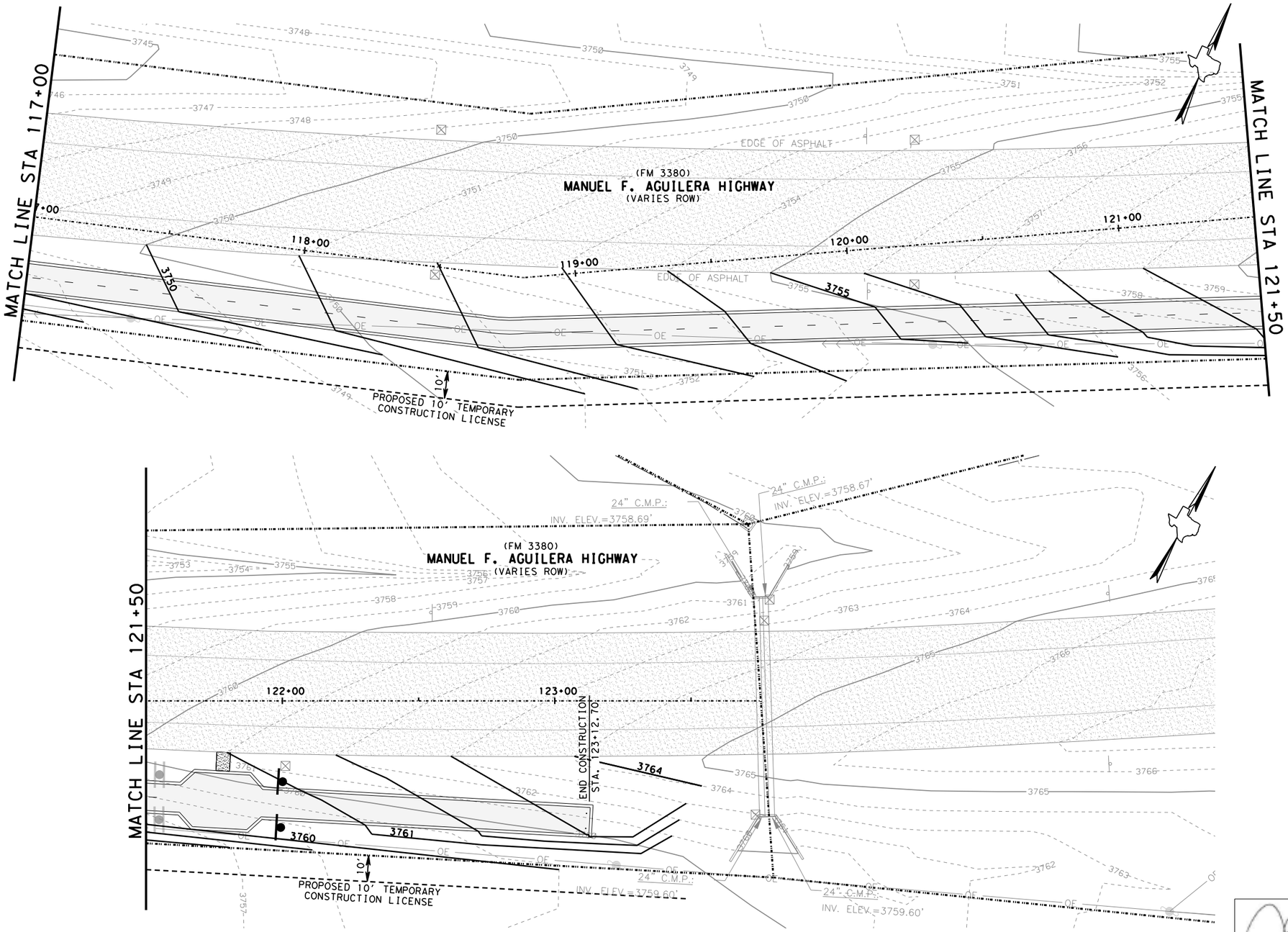
TORNILLO SHARED USE PATH

DEMOLITION & GRADING PLAN

STA 108+00 TO STA 117+00

SHEET 13 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		74
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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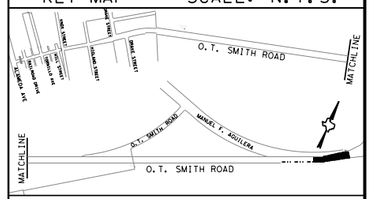


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- 3595 PROPOSED CONTOUR
- PROPOSED HANDRAIL
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED BOLLARD
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

DEMOLITON & GRADING PLAN

STA 117+00 TO STA 123+12.70

SHEET 14 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	75

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

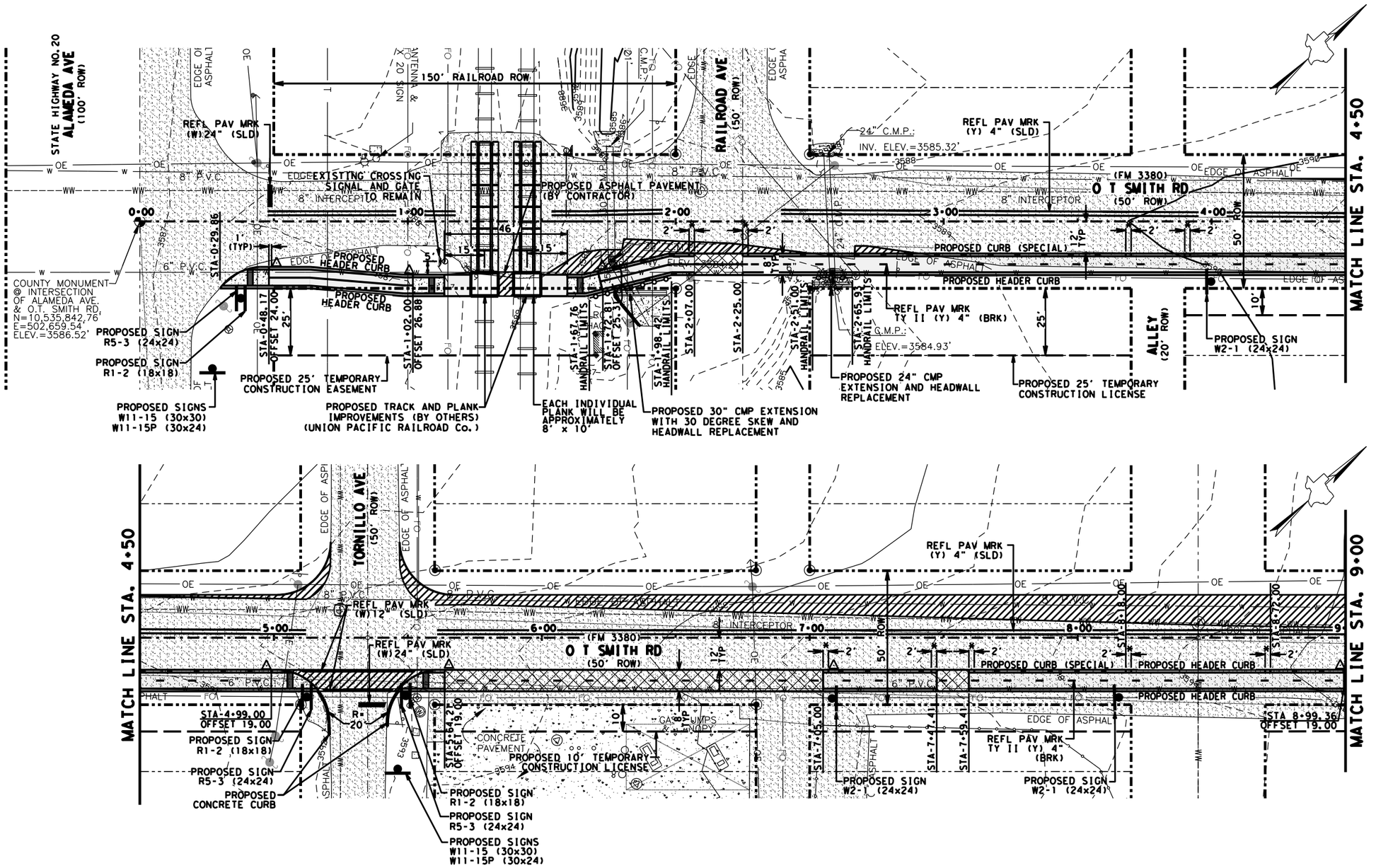
GENERAL NOTE

CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, BARBED WIRE, OR OTHER APPURTENANCES ALONG THE PROJECT TO ALLOW FOR PROPOSED GRADING OF THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE EFFORTS WITH BOTH THE ADJACENT PROPERTY OWNER(S), AND THE COUNTY OF EL PASO FIELD REPRESENTATIVE BEFORE BEGINNING ANY REMOVALS. ALL WORK AND MATERIALS NEEDED FOR REMOVAL AND REPLACEMENT OF EXISTING FENCE, BARBED WIRE, AND APPURTENANCES SHALL BE SUBSIDIARY TO THIS ITEM.

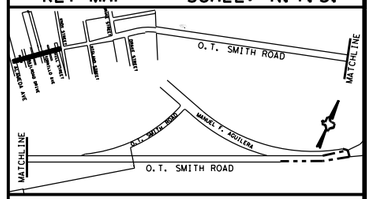
SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
100	6002	PREPARING ROW	STA	6

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE F)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY	ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL) (ORD COMP) (TY A)	CY	216	529	6036	CONCRETE CURB (SPECIAL)	LF	800
247	6041	FL BS (CMP IN PLC) (TYA GR1-2) (FNAL POS)	CY	235	530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	252
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	1579	531	6013	CURB RAMPS (TY 10)	EA	3
310	6014	PRIME COAT (SS-1H)	GAL	790	644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	8
340	6050	D-GR HMA (SQ) TY-C PG70-22	TON	89	666	6042	REFL PAV MRK TY I (W)12" (SLD) (100MIL)	LF	60
340	6122	D-GR HMA (SQ) TY-D PG70-22	TON	89	666	6048	REFL PAV MRK TY I (W)24" (SLD) (100MIL)	LF	24
432	6001	RIPRAP (CONC) (4 IN)	CY	2	666	6180	REFL PAV MRK TY II (W)12" (SLD)	LF	60
450	6051	RAIL (HANDRAIL) (TY E)	LF	30	666	6182	REFL PAV MRK TY II (W)24" (SLD)	LF	24
460	6003	CMP (GAL STL 24 IN)	LF	8	666	6205	REFL PAV MRK TY II (Y)4" (BRK)	LF	156
460	6004	CMP (GAL STL 30 IN)	LF	15	666	6207	REFL PAV MRK TY II (Y)4" (SLD)	LF	110
466	6097	HEADWALL (CH-PW-O) (DIA=24 IN)	EA	1	678	6006	PAV SURF PREP FOR MRK (12")	LF	60
466	6132	HEADWALL (CH-PW-S) (DIA=30 IN)	EA	1	678	6008	PAV SURF PREP FOR MRK (24")	LF	24
500	6001	MOBILIZATION	LS	1	ELP1	6001	RAILROAD TRACKS CROSSING IMPROVEMENTS	LS	1
529	6003	CONC CURB (TY II A)	LF	800	ELP3	6001	FIXED BOLLARDS	EA	14

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

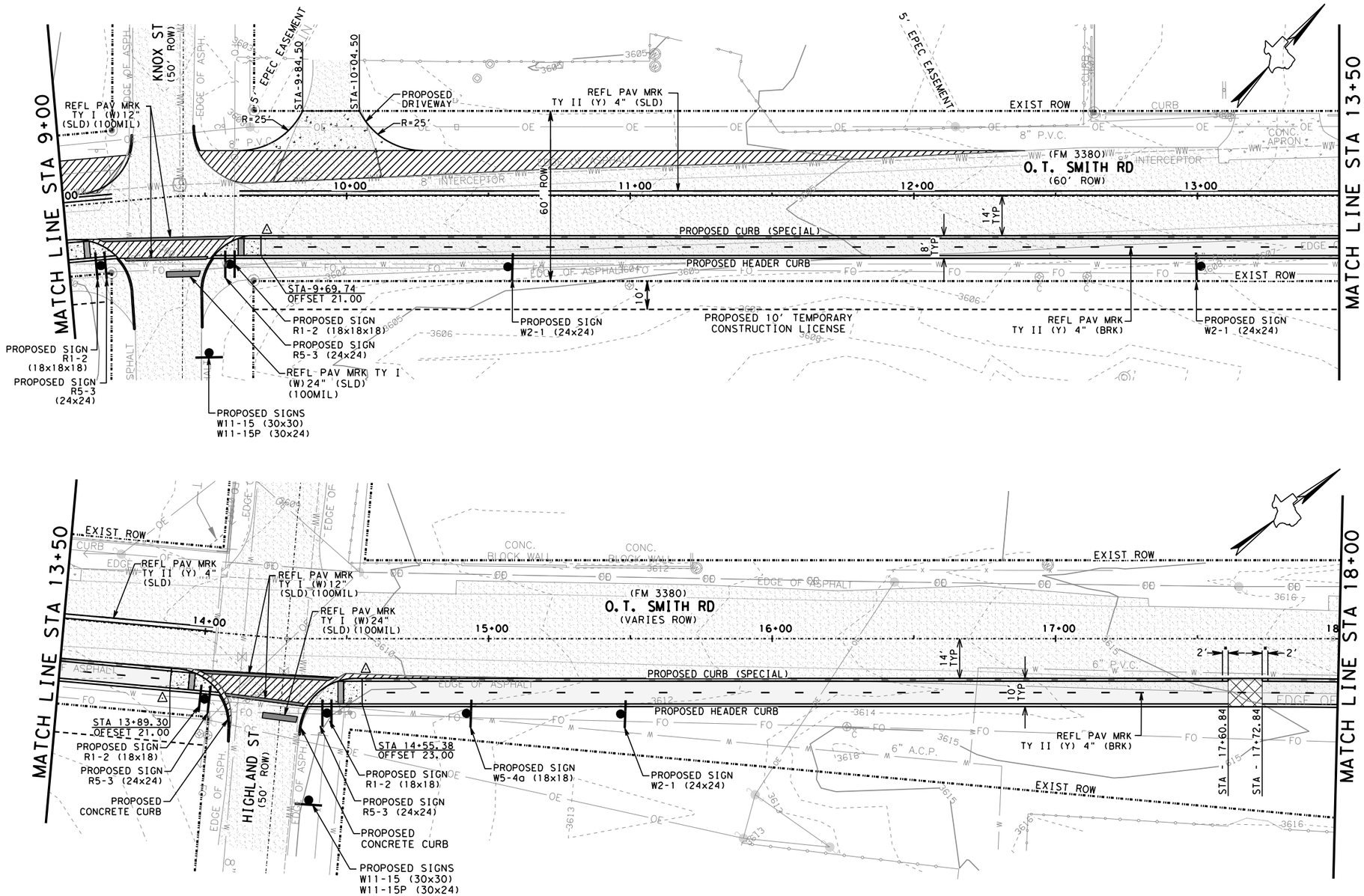
TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

STA 0+00 TO STA 9+00

SHEET 1 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.			SHEET NO.
6	STP 2019(961)TAPS			76
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0924	06	560	CS	



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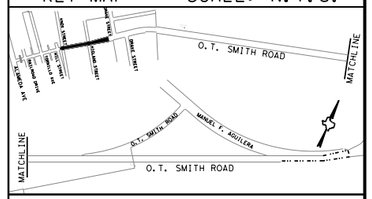


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE F)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY	ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	277	644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	10
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	149	666	6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	120
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1006	666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	22
310	6014	PRIME COAT (SS-1H)	GAL	503	666	6180	REFL PAV MRK TY II (W)12"(SLD)	LF	120
340	6050	D-GR HMA(SQ) TY-C PG70-22	TON	51	666	6182	REFL PAV MRK TY II (W)24"(SLD)	LF	22
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	76	666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	192
529	6003	CONC CURB (TY II A)	LF	900	678	6006	PAV SURF PREP FOR MRK (12")	LF	120
529	6036	CONCRETE CURB (SPECIAL)	LF	900	678	6008	PAV SURF PREP FOR MRK (24")	LF	22
530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	63	ELP3	6001	FIXED BOLLARDS	EA	6
531	6013	CURB RAMPS (TY 10)	EA	4					

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

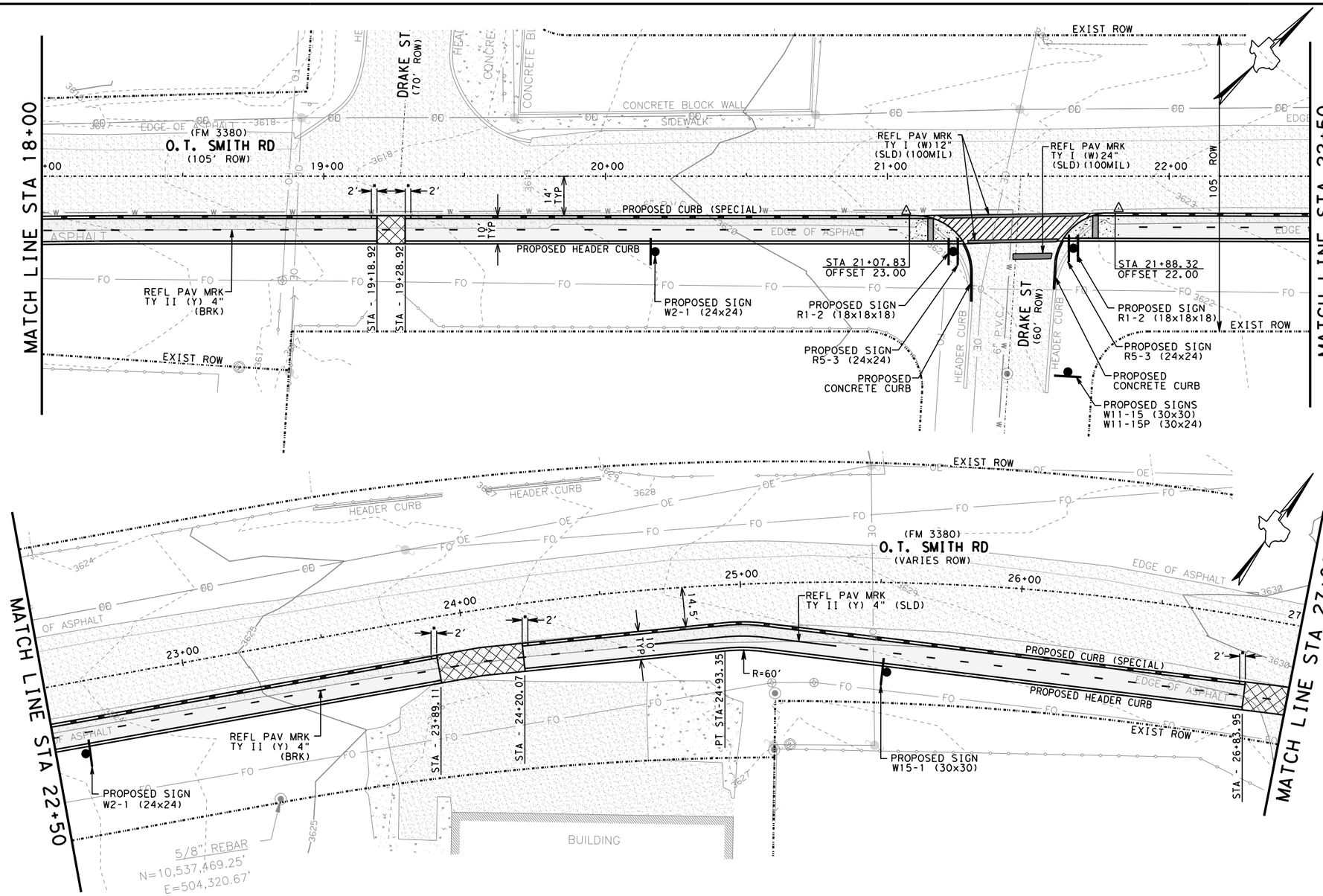
TORNILLO SHARED USE PATH

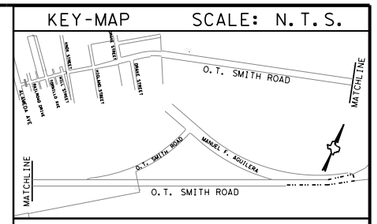
SHARED USE PATH PLAN

STA 9+00 TO STA 18+00

SHEET 2 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		77
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY	ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	341	644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	6
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	859	666	6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	60
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	900	666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	11
310	6014	PRIME COAT (SS-1H)	GAL	450	666	6180	REFL PAV MRK TY II (W)12"(SLD)	LF	60
340	6050	D-GR HMA(SQ) TY-C PG70-22	TON	9	666	6182	REFL PAV MRK TY II (W)24"(SLD)	LF	11
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	88	666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	186
529	6003	CONC CURB (TY II A)	LF	900	666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	66
529	6036	CONCRETE CURB (SPECIAL)	LF	900	678	6006	PAV SURF PREP FOR MRK (12")	LF	60
530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	50	678	6008	PAV SURF PREP FOR MRK (24")	LF	11
531	6013	CURB RAMPS (TY 10)	EA	2	ELP3	6001	FIXED BOLLARDS	EA	4

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL
REGIONAL MOBILITY AUTHORITY

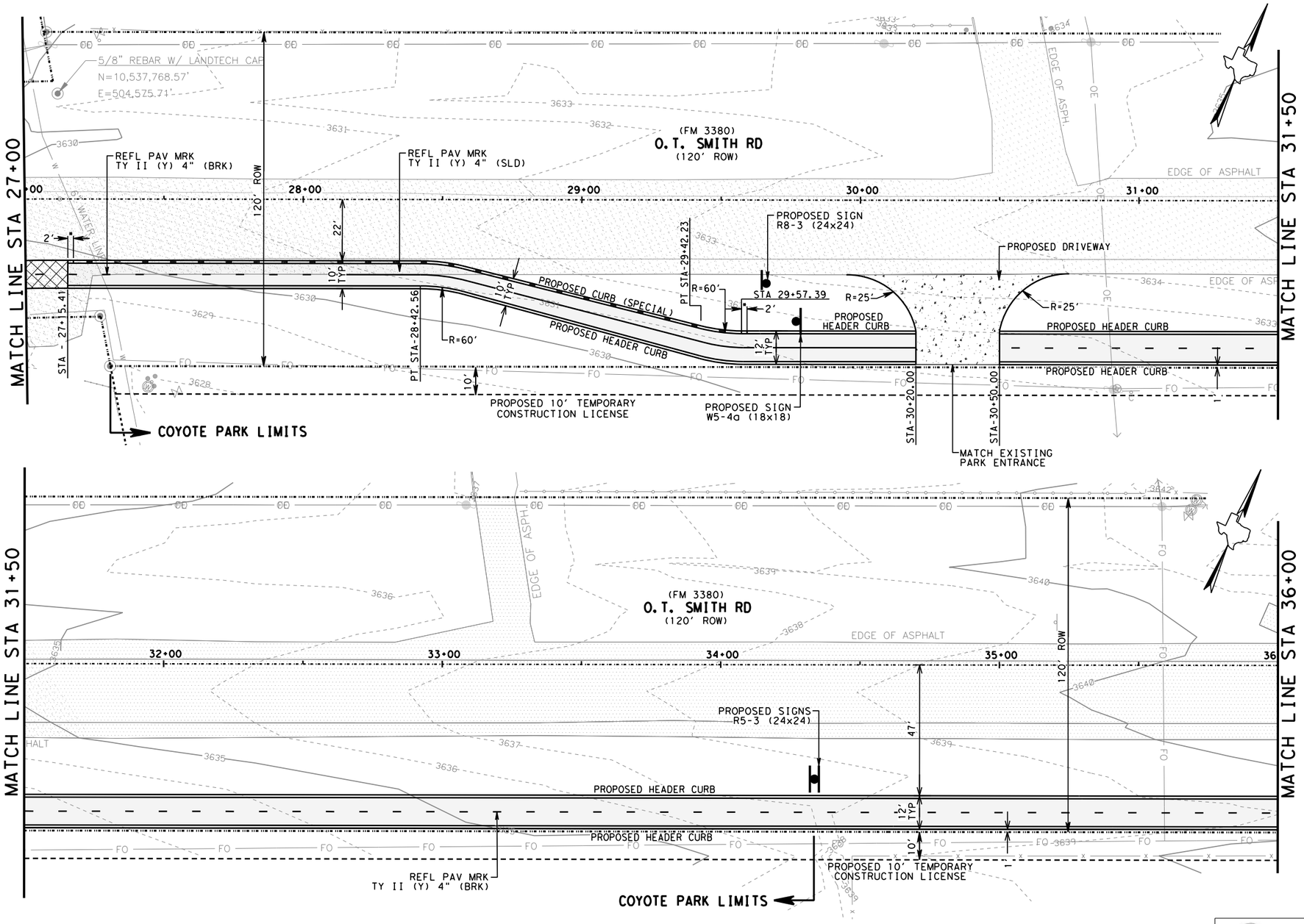
TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

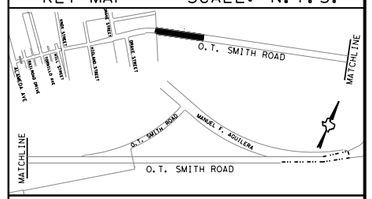
STA 18+00 TO STA 27+00

SHEET 3 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		78
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE F)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	375
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	162
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1161
310	6014	PRIME COAT (SS-1H)	GAL	581
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	108
529	6003	CONC CURB (TY II A)	LF	1650
529	6036	CONCRETE CURB (SPECIAL)	LF	250
530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	183
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	3
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	168
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	214

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

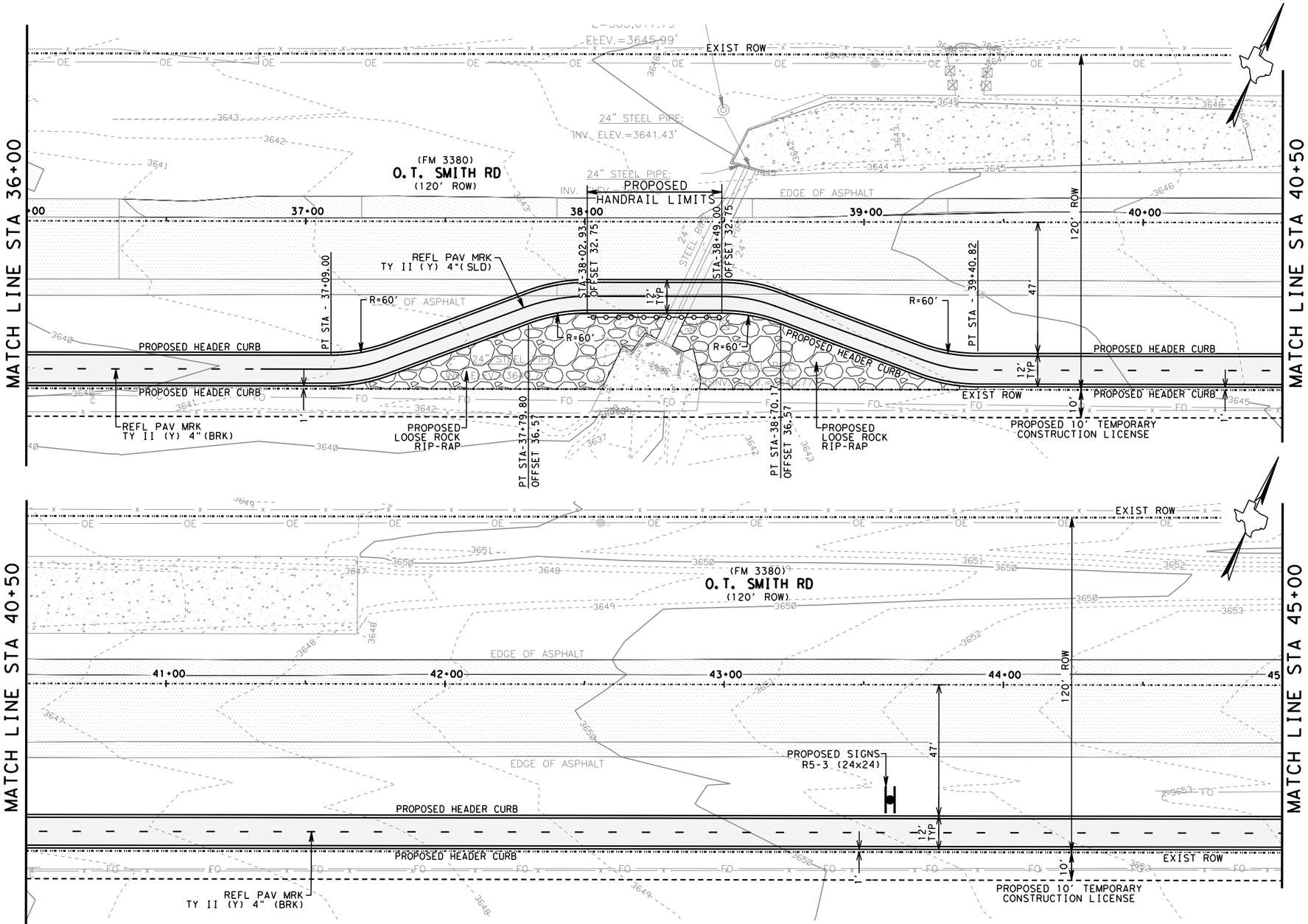
SHARED USE PATH PLAN

STA 27+00 TO STA 36+00

SHEET 4 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	79

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



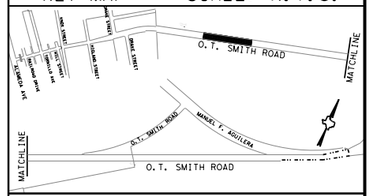
SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	616
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	139
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1000
310	6014	PRIME COAT (SS-1H)	GAL	500
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
432	6026	RIPRAP (STONE COMMON)(DRY)(18IN)	CY	187
450	6051	RAIL (HANDRAIL)(TY E)	LF	50
529	6003	CONC CURB (TY II A)	LF	1650
529	6036	CONCRETE CURB (SPECIAL)	LF	250
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	165
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	266

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

STA 36+00 TO STA 45+00

SHEET 5 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
6	STP 2019(961)TAPS			80
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0924	06	560	CS	

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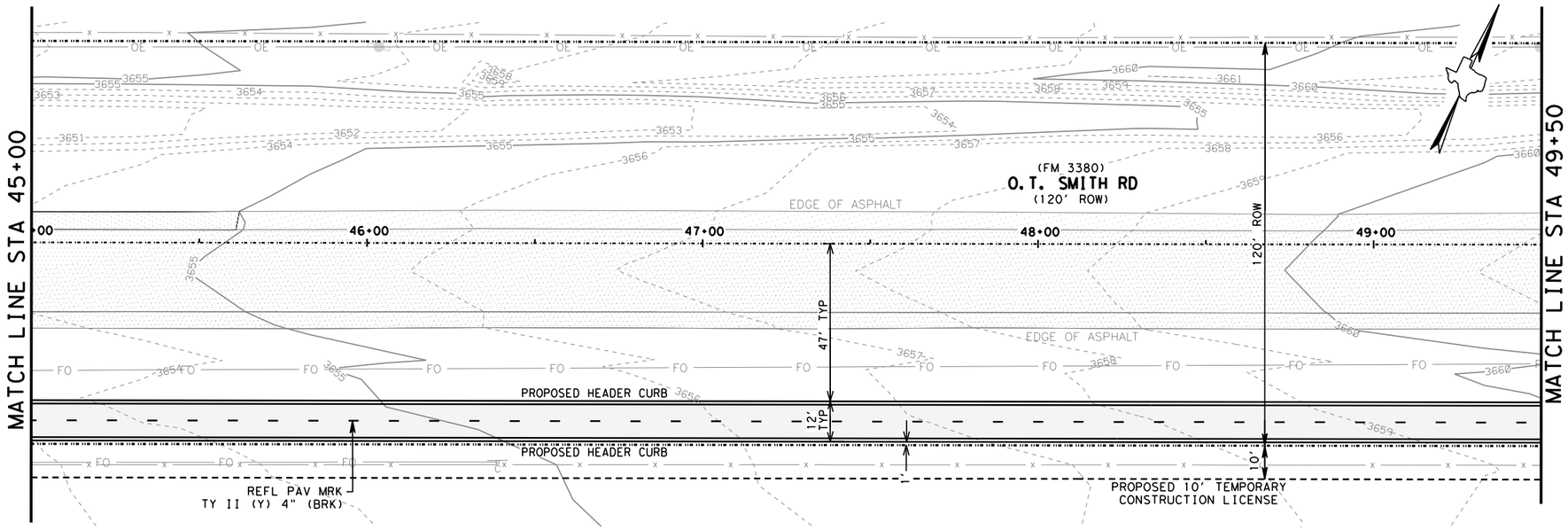
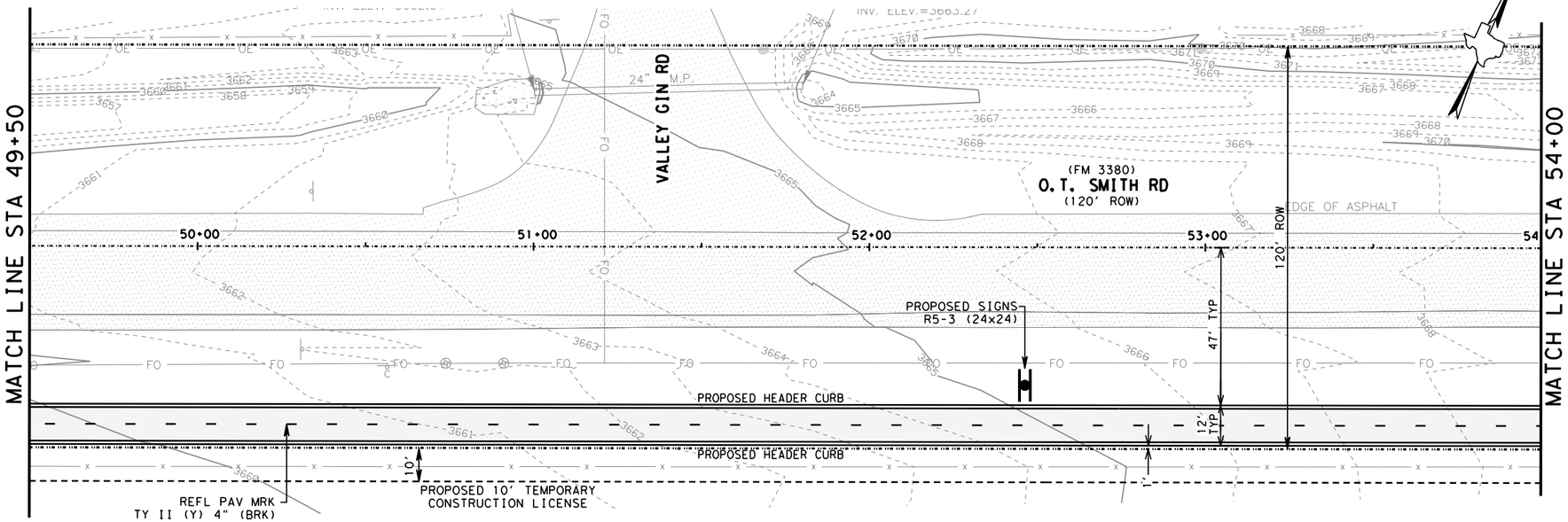




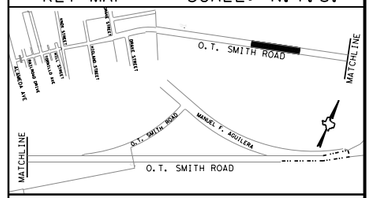
GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	752
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	139
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1000
310	6014	PRIME COAT (SS-1H)	GAL	500
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	225

KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
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- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

STA 45+00 TO STA 54+00

SHEET 6 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	81

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

STATE OF TEXAS · ROBERTO MORENO · 60910 · LICENSED PROFESSIONAL ENGINEER · 5/30/19

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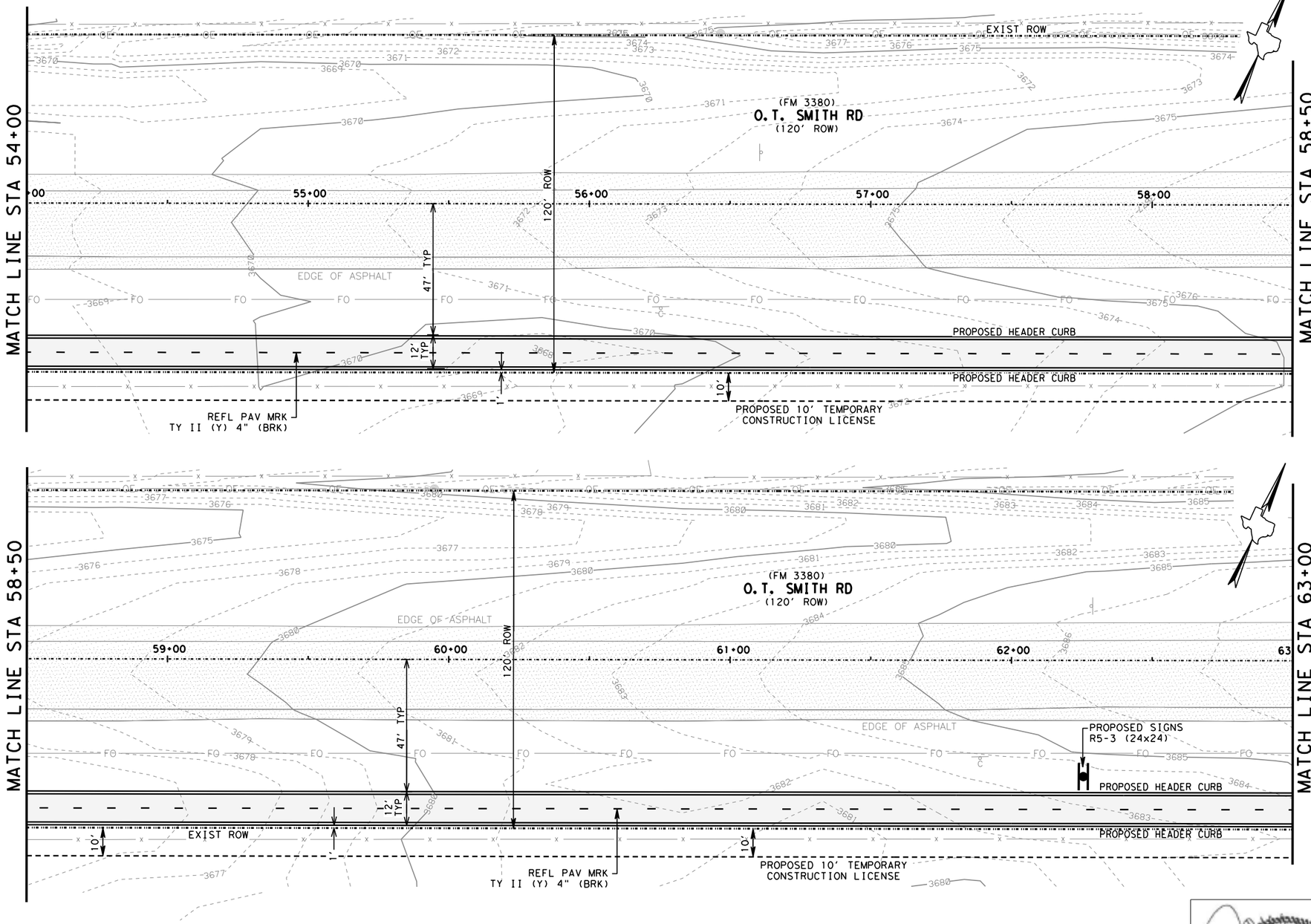
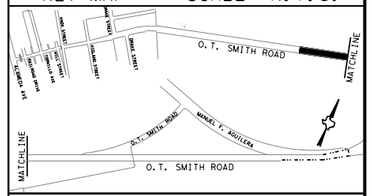


KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE F)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	561
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	139
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1000
310	6014	PRIME COAT (SS-1H)	GAL	500
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	225

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

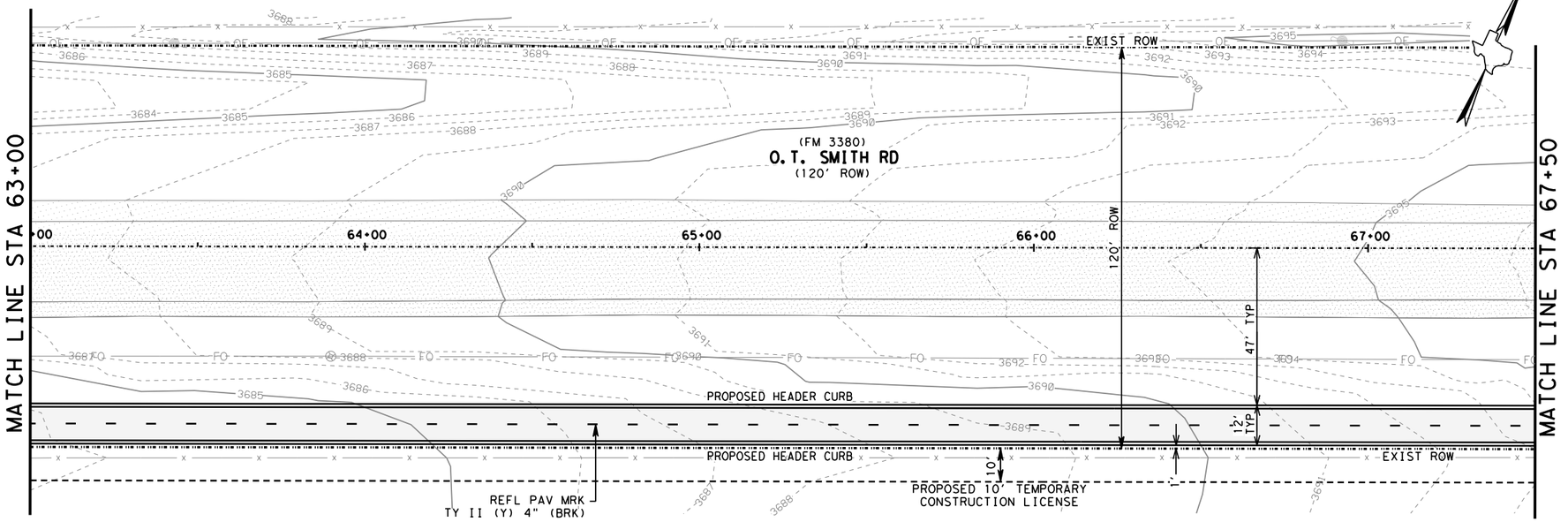
TORNILLO SHARED USE PATH

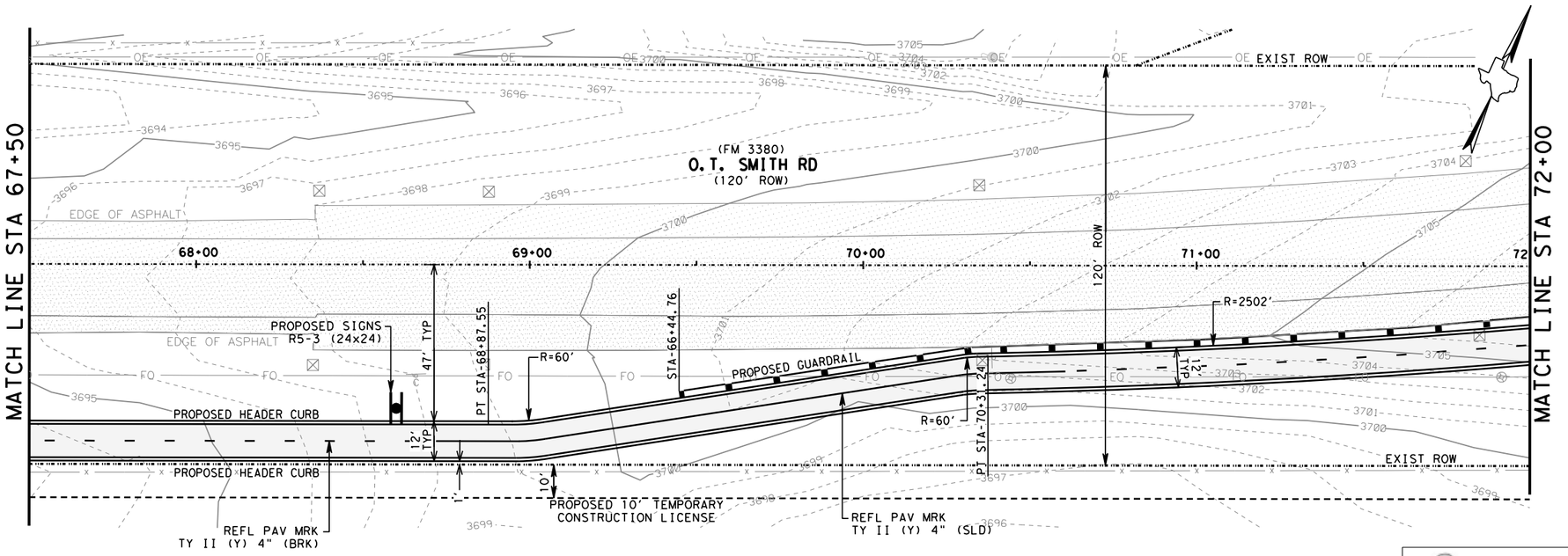
SHARED USE PATH PLAN

STA 54+00 TO STA 63+00

SHEET 7 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		82
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	576
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	139
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1000
310	6014	PRIME COAT (SS-1H)	GAL	500
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
540	6001	MTL W-BEAM GD FEN (TIM POST)	LF	250
544	6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
658	6007	INSTL DEL ASSM (D-SW)SZ 1(FLX)GF2	EA	40
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	180
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	192

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

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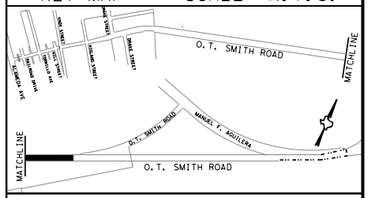
KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

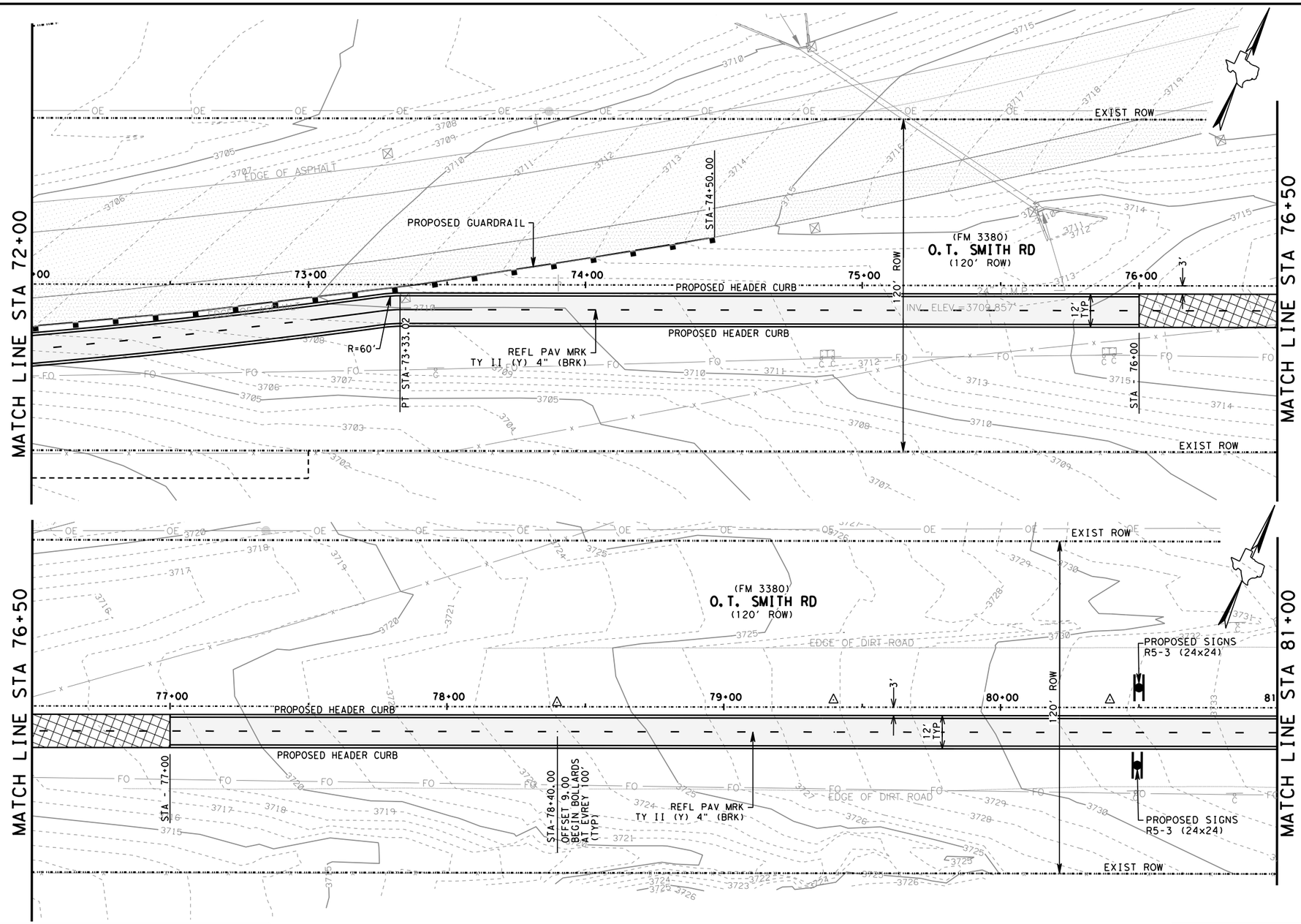
TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

STA 63+00 TO STA 72+00

SHEET 8 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		83
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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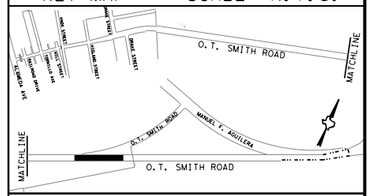

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE F)
- PROPOSED CURB (SPECIAL)
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- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	710
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	158
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1134
310	6014	PRIME COAT (SS-1H)	GAL	567
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	134
540	6001	MTL W-BEAM GD FEN (TIM POST)	LF	350
544	6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
658	6007	INSTL DEL ASSM (D-SW)SZ 1(FLX)GF2	EA	56
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	216
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	59
ELP3	6001	FIXED BOLLARDS	EA	3

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

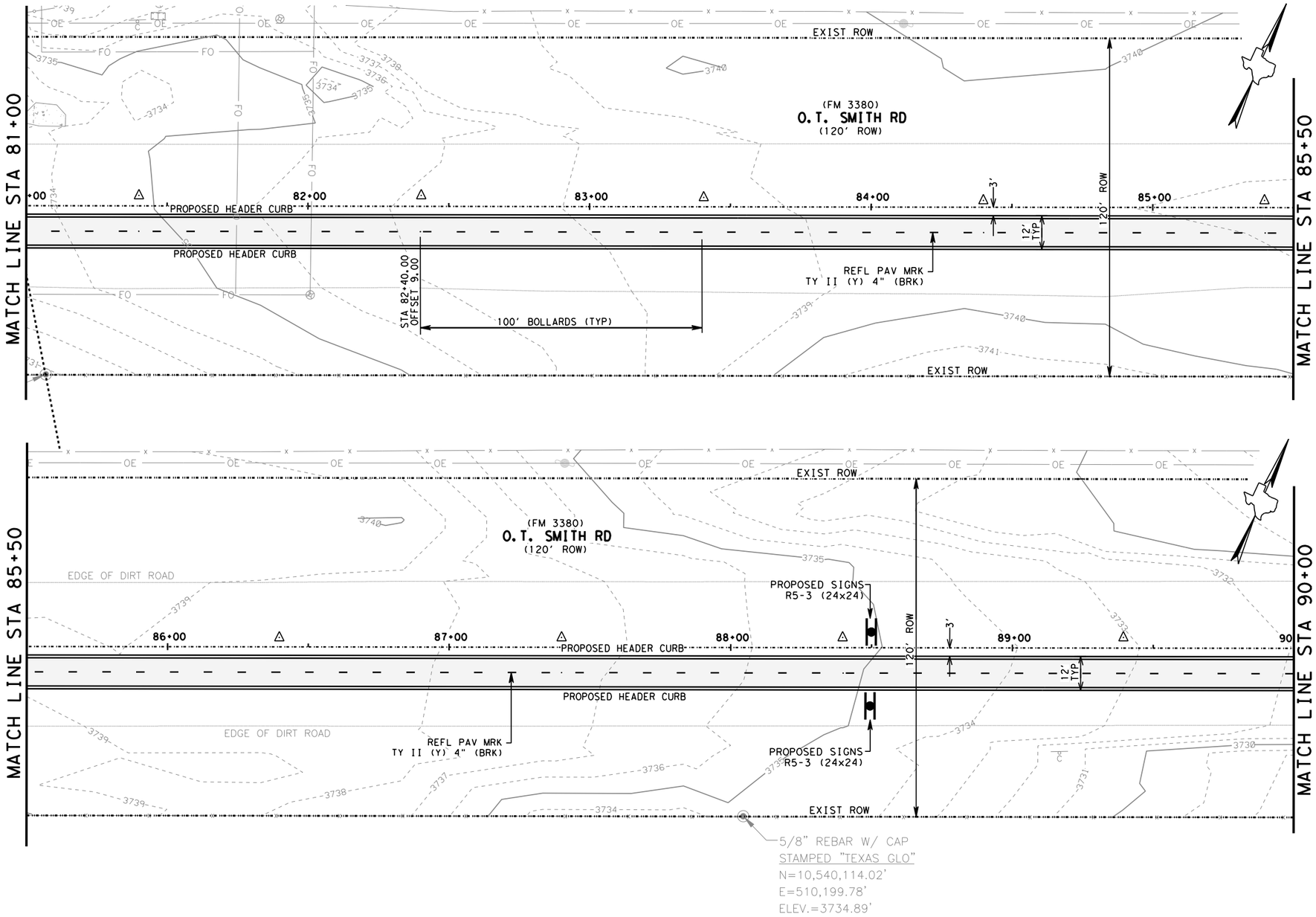
TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

STA 72+00 TO STA 81+00

SHEET 9 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		84
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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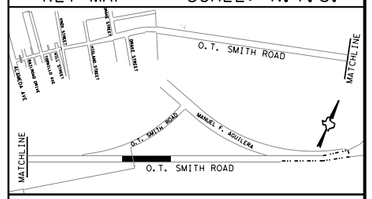

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	909
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	139
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1000
310	6014	PRIME COAT (SS-1H)	GAL	500
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	225
ELP3	6001	FIXED BOLLARDS	EA	9

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

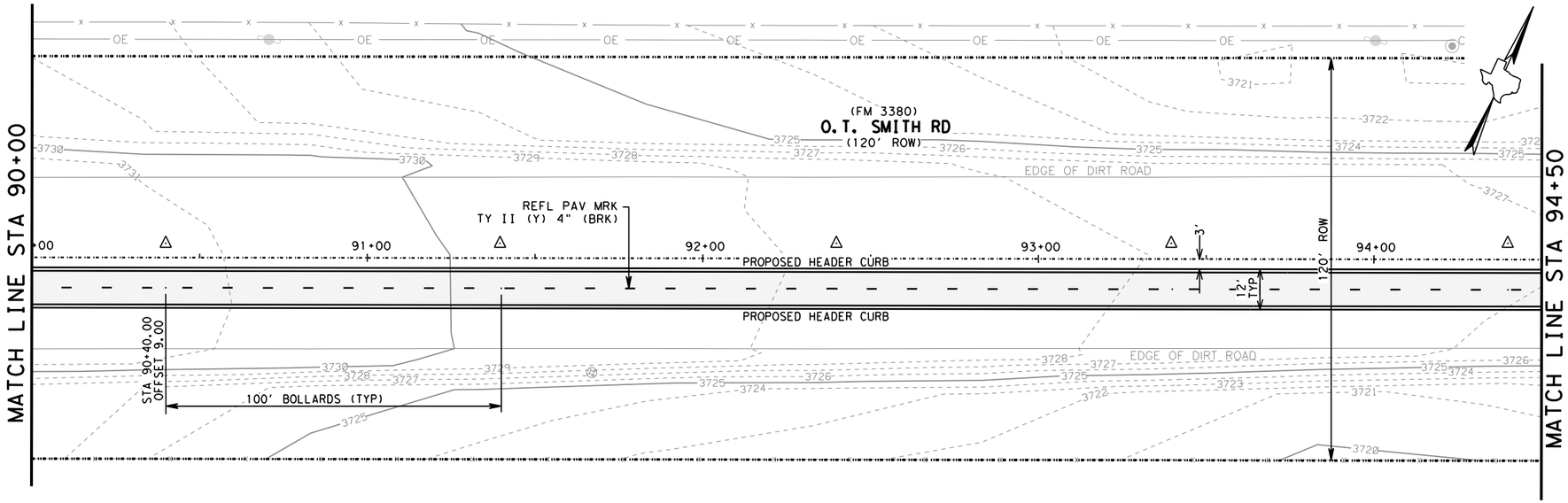
SHARED USE PATH PLAN

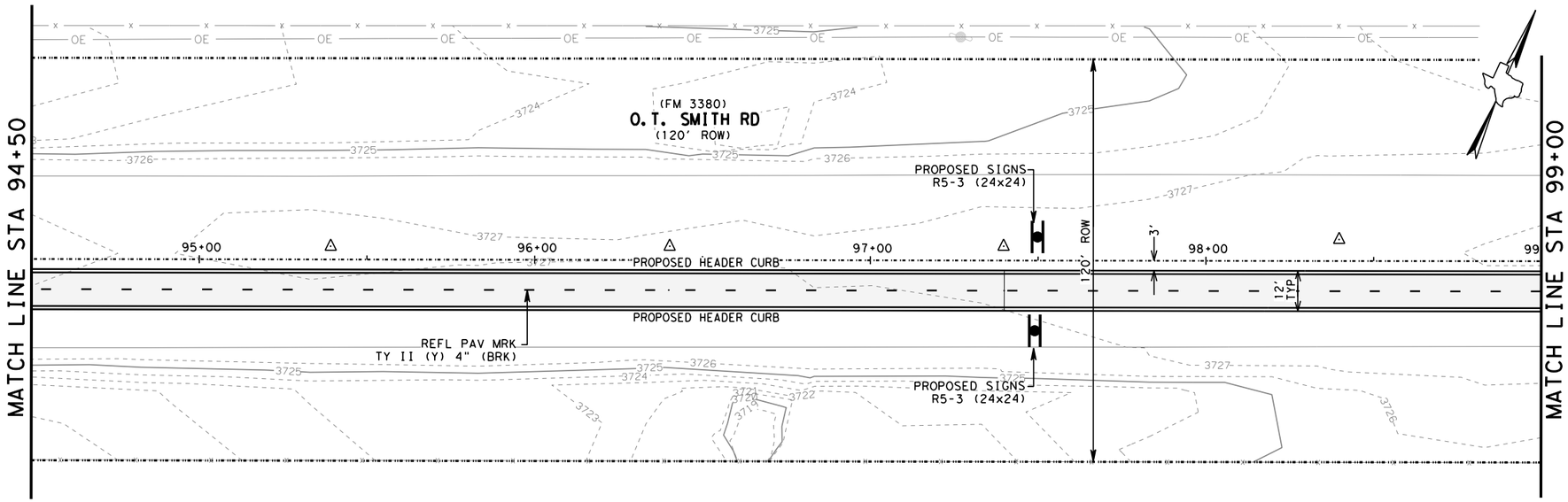
STA 81+00 TO STA 90+00

SHEET 10 OF 14

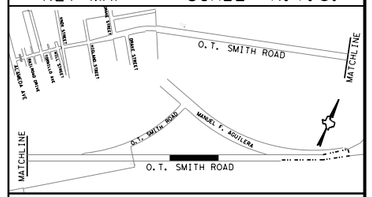
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	85

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
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- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
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- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	626
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	139
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1000
310	6014	PRIME COAT (SS-1H)	GAL	500
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	225
ELP3	6001	FIXED BOLLARDS	EA	9

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

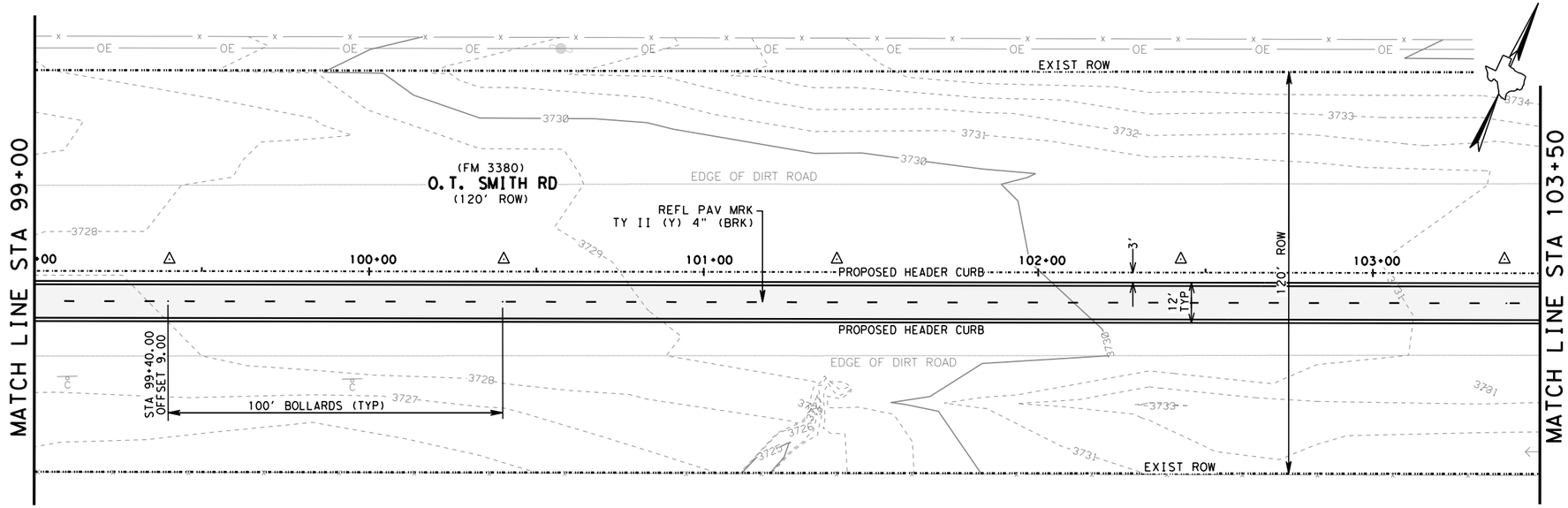
TORNILLO SHARED USE PATH

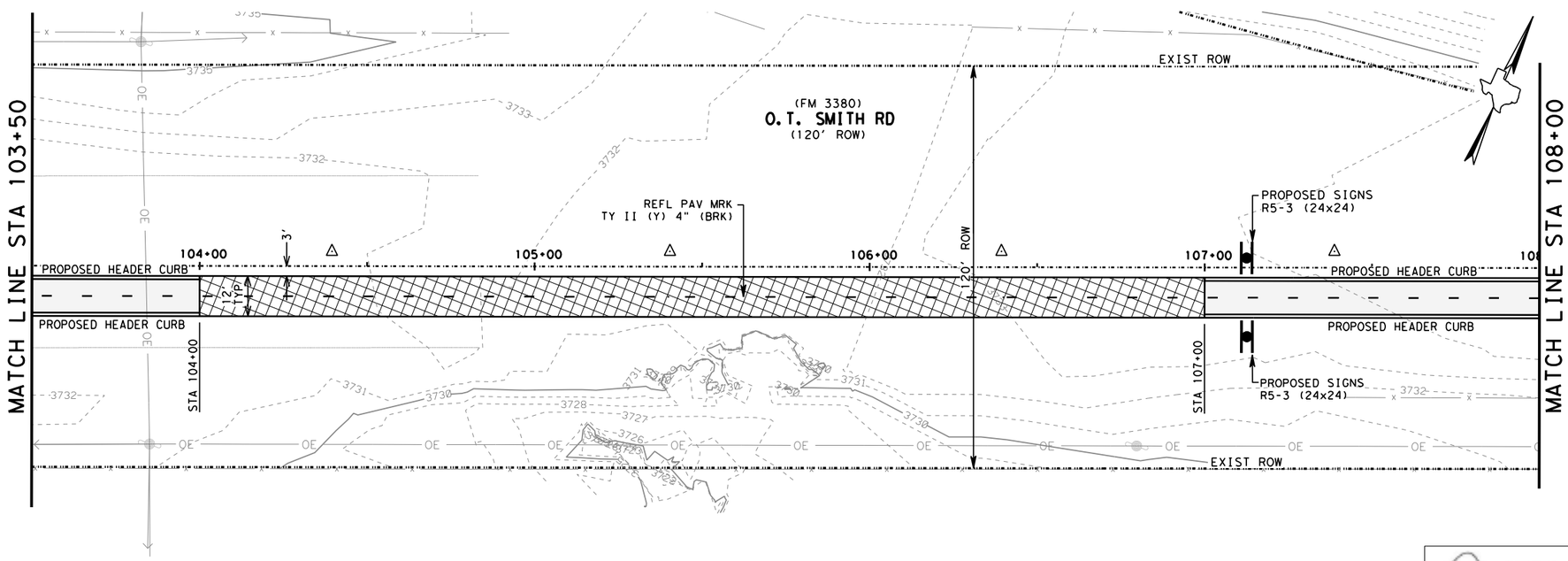
SHARED USE PATH PLAN

STA 90+00 TO STA 99+00

SHEET 11 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
6	STP 2019(961)TAPS			86
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0924	06	560	CS	





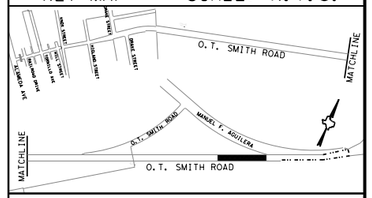
SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	738
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	140
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1001
310	6014	PRIME COAT (SS-1H)	GAL	501
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	74
529	6003	CONC CURB (TY II A)	LF	1800
530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	334
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	225
ELP3	6001	FIXED BOLLARDS	EA	9

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE E)
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- PROPOSED CONCRETE DRIVEWAY
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- PROPOSED SHARED PATH (CONCRETE)
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- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

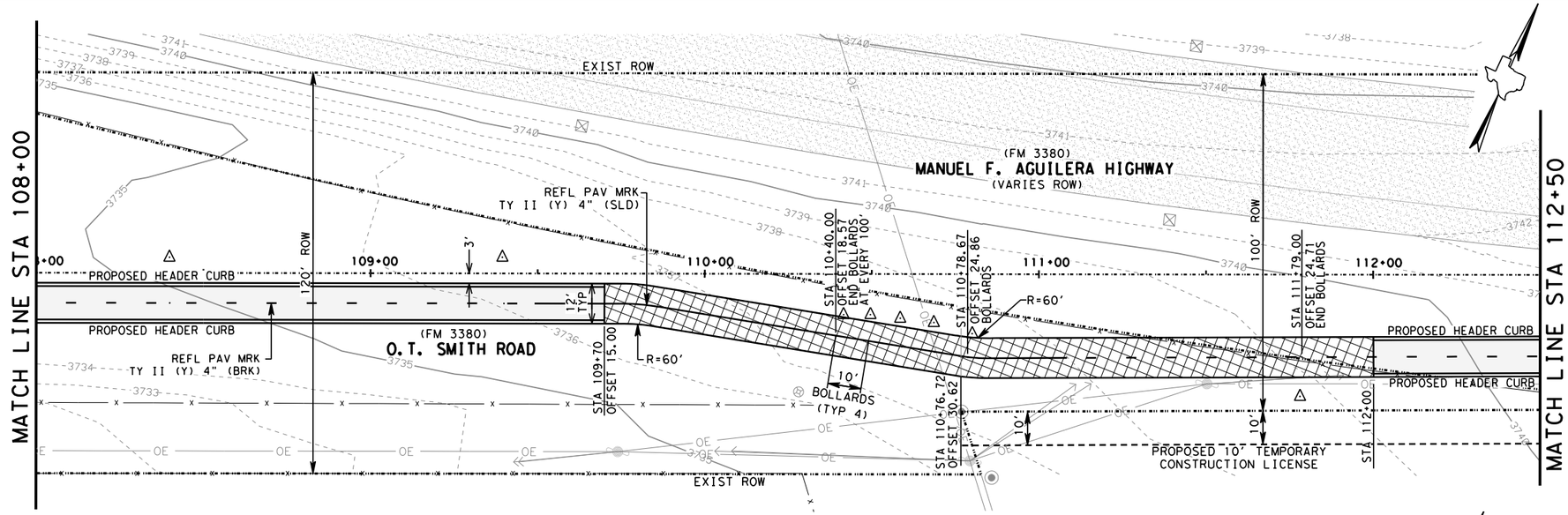
SHARED USE PATH PLAN

STA 99+00 TO STA 108+00

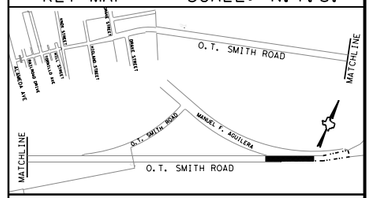
SHEET 12 OF 14

FED.RD. DIV.NO:	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		87
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
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- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	851
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	175
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	1256
310	6014	PRIME COAT (SS-1H)	GAL	628
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	110
529	6003	CONC CURB (TY II A)	LF	1800
530	6010	INTRSCT, DRVWAYS, & TURNOUT (CONC)	SY	256
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	186
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	162
ELP3	6001	FIXED BOLLARDS	EA	8

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

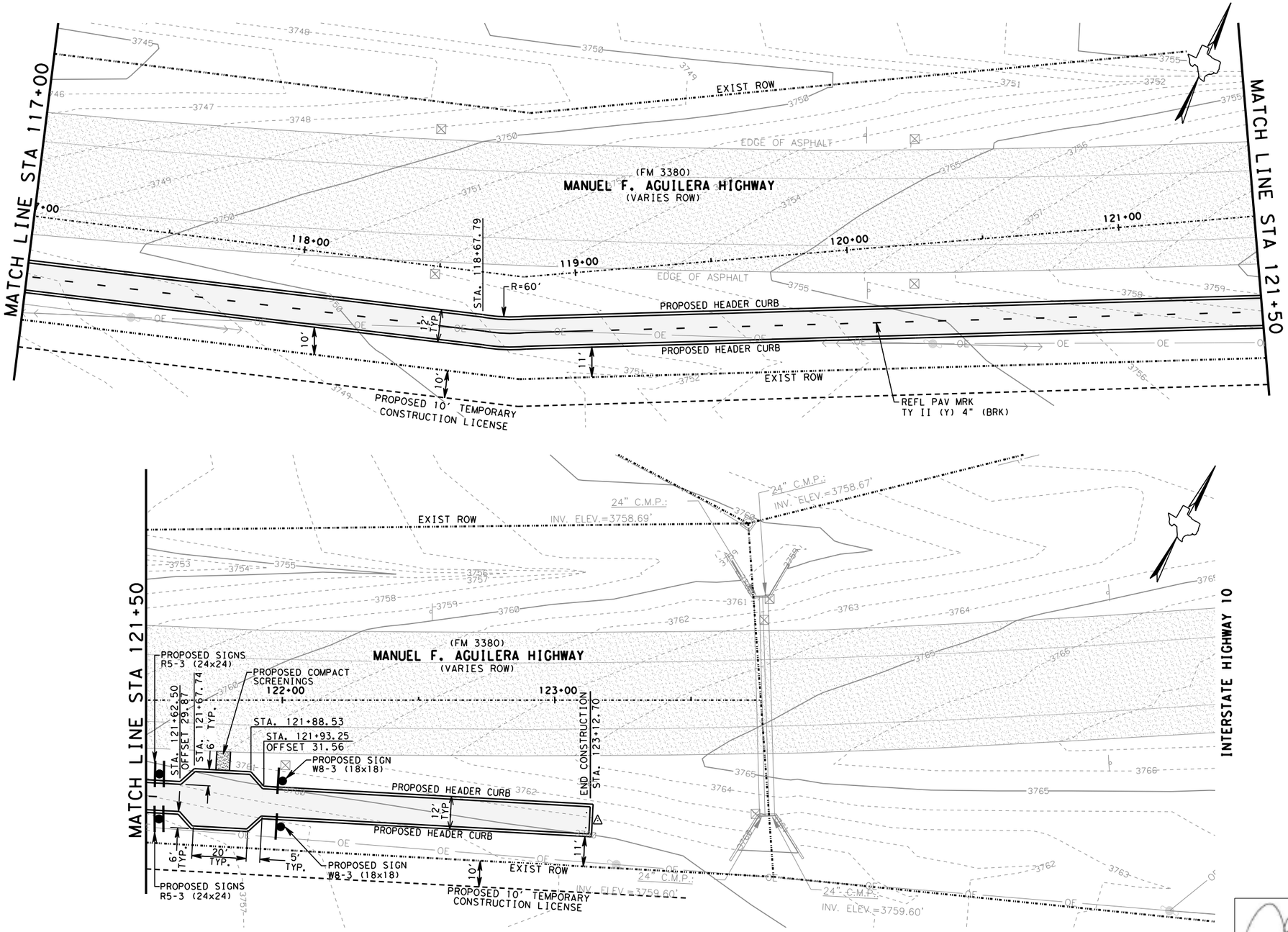
SHARED USE PATH PLAN

STA 108+00 TO STA 117+00

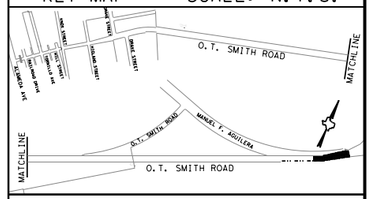
SHEET 13 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	88

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- EXISTING CONCRETE
- EXISTING PAVEMENT
- PROPOSED BOLLARD (APPROXIMATE LOCATION) (SEE SHEET FOR TYPICAL DETAIL)
- PROPOSED CONCRETE CURB TRANSITION
- PROPOSED HANDRAIL (TYPE F)
- PROPOSED CURB (SPECIAL)
- PROPOSED HEADER CURB
- PROPOSED 6" CURB
- PROPOSED GUARDRAIL
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED SHARED PATH (ASPHALT)
- PROPOSED SHARED PATH (CONCRETE)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED LOOSE ROCK RIP-RAP
- PROPOSED CONCRETE RAMP (TYPE 10)
- PROPOSED CONCRETE RAMP (TYPE 1)
- PROPOSED 4" DOUBLE SOLID YELLOW
- PROPOSED 12" SOLID WHITE
- PROPOSED 24" SOLID WHITE

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
132	6009	EMBANKMENT (ORIGINAL)(ORD COMP)(TY A)	CY	447
247	6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	98
251	6034	REWORK BS MTL(TY C)(8") (ORD COMP)	SY	705
310	6014	PRIME COAT (SS-1H)	GAL	353
340	6122	D-GR HMA(SQ) TY-D PG70-22	TON	78
529	6003	CONC CURB (TY II A)	LF	1300
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	4
666	6205	REFL PAV MRK TY II (Y) 4" (BRK)	LF	102
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	65
1005	6003	LOOSE AGGR FOR GROUNDCOVER (TYPE III)	CY	2
ELP3	6001	FIXED BOLLARDS	EA	2

GENERAL NOTES

1. PAVEMENT MARKING QUANTITIES LISTED IN THIS SHEET REFER TO MARKINGS ALONG SHARED USE PATH AND CROSSWALKS ALONG THE PATH. QUANTITIES FOR PAVEMENT MARKINGS TO BE INSTALLED ALONG THE OT SMITH ROAD ROADWAY ARE LISTED IN THE TRAFFIC CONTROL PLAN SHEETS.

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Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

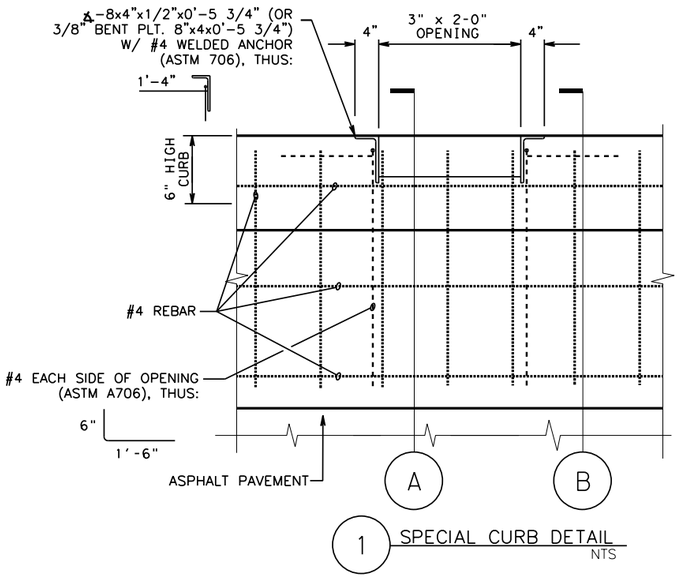
TORNILLO SHARED USE PATH

SHARED USE PATH PLAN

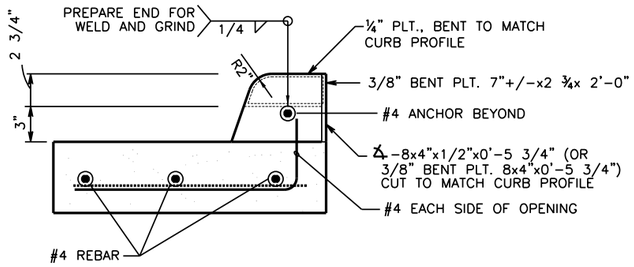
STA 117+00 TO STA 123+12.70

SHEET 14 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		89
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

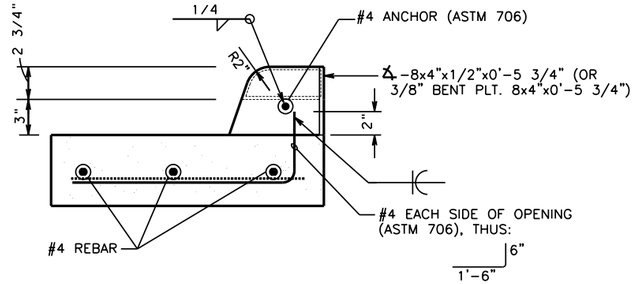


1 SPECIAL CURB DETAIL
NTS



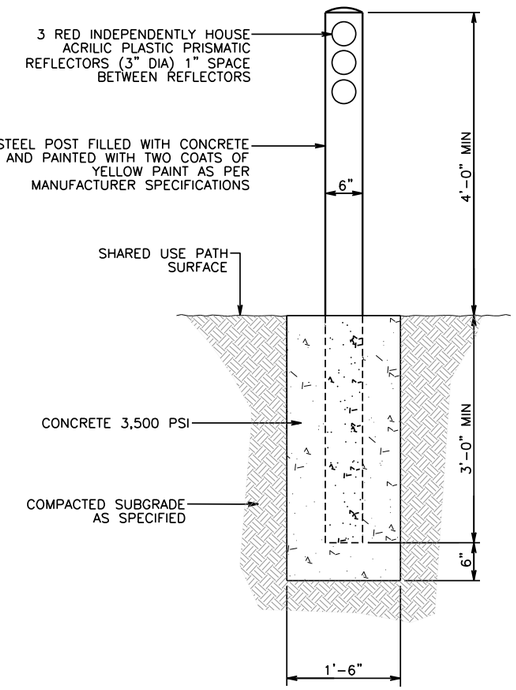
NOTE: ALL STEEL (OPENING FRAME) TO BE GALVANIZED (G90)

A SECTION
NTS

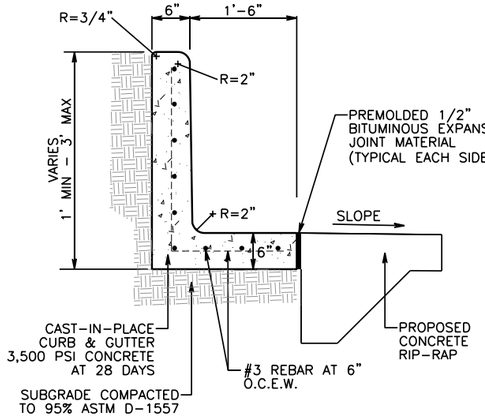


NOTE: ALL STEEL (OPENING FRAME) TO BE GALVANIZED (G90)

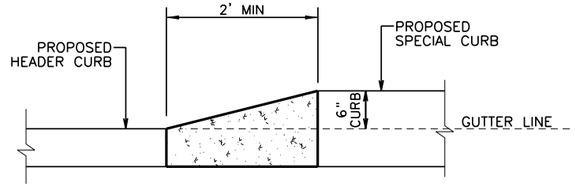
B SECTION
NTS



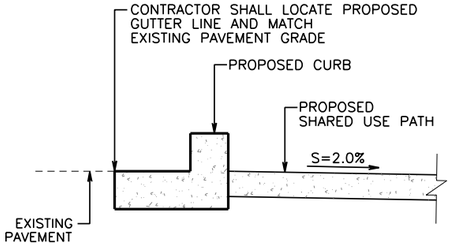
5 PIPE BOLLARD DETAIL
SCALE: 1/2"=1'-0"



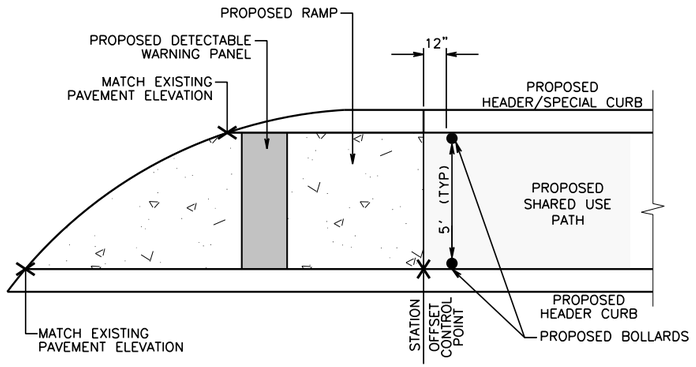
2 STEM WALL DETAIL
SCALE: 1/2"=1'-0"



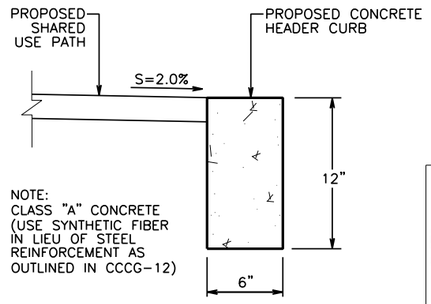
3 HEADER CURB TO SPECIAL CURB TRANSITION
SCALE: 1/2"=1'-0"



4 TYPE II CURB & GUTTER PLACEMENT DETAIL
SCALE: 1/2"=1'-0"



6 TYPICAL RAMP AND BOLLARDS LAYOUT DETAIL
NTS



7 CONCRETE HEADER CURB AND PAVEMENT SHARED PATH SECTION
SCALE: 1"=1'-0"

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TYPICAL DETAILS

SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		90
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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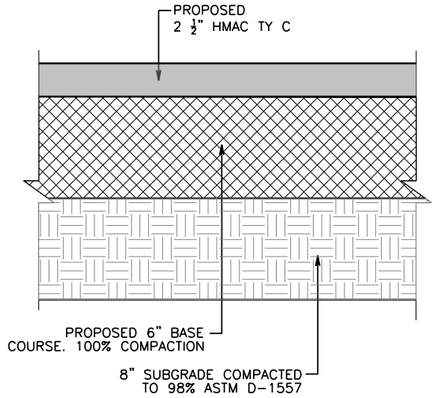
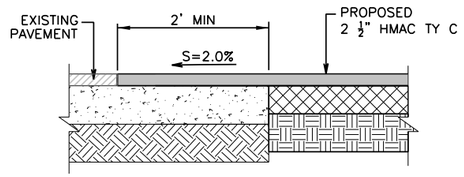
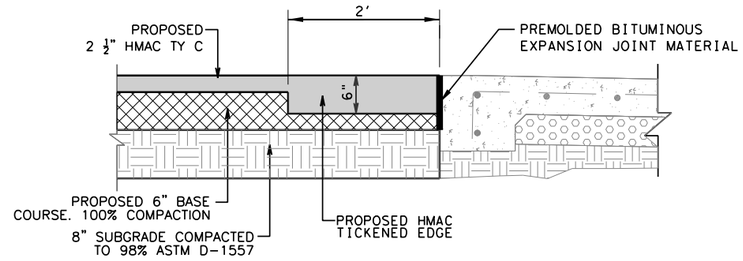


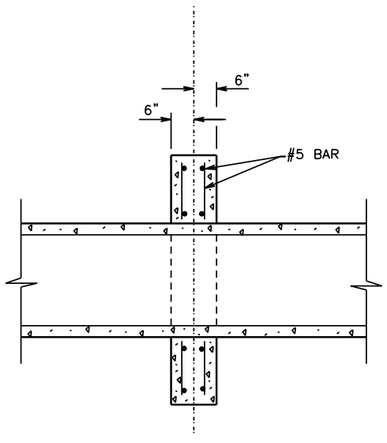
1 TYPICAL ASPHALT PAVEMENT DETAIL
SCALE: 1"=1'-0"



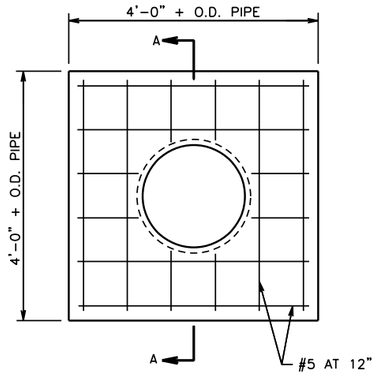
2 PAVEMENT JUNCTION DETAIL
SCALE: 1/4"=1'-0"



3 THICKENED EDGE ASPHALT PAVEMENT DETAIL
SCALE: 1/2"=1'-0"

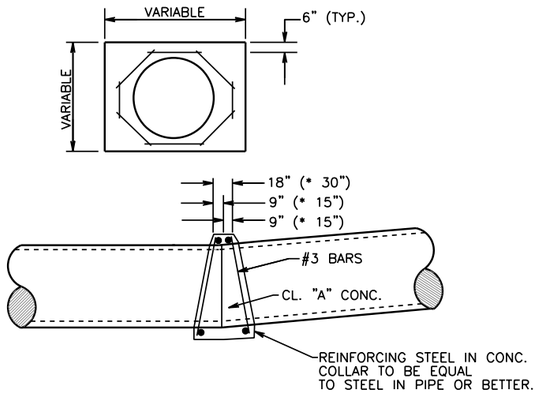


SECTION A-A



FRONT ELEVATION

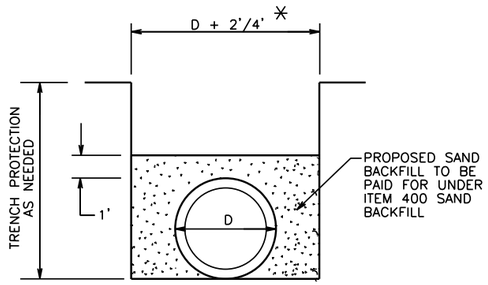
1 CONCRETE PIPE COLLAR
NTS



DETAIL FOR CONC. COLLARS
DRAINAGE STRUCTURES AND PIPE
SIPHONS (HORIZ. & VERT. BENDS)
NTS

2

NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.



✳ PLACE 1' OF FILL ON EACH SIDE OF THE PIPE.

3 REINFORCED CONCRETE PIPE
TYPICAL BACKFILL DETAIL-SAND

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH

TYPICAL DETAILS

SHEET 2 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		91
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/30/2019 12:36:24 PM aurora

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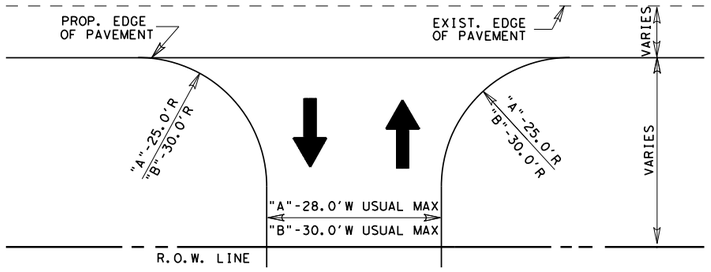
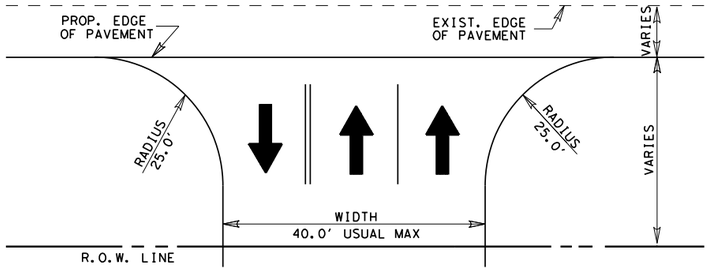
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

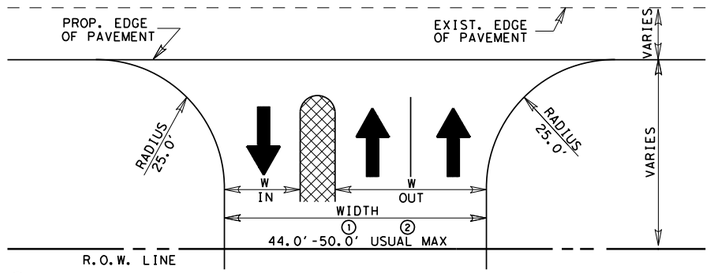
"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES① PER HOUR

① - *DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS*



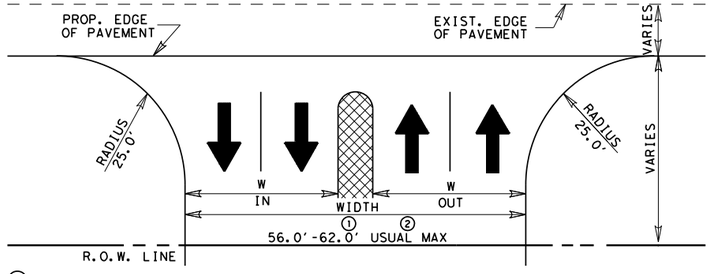
ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)

DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



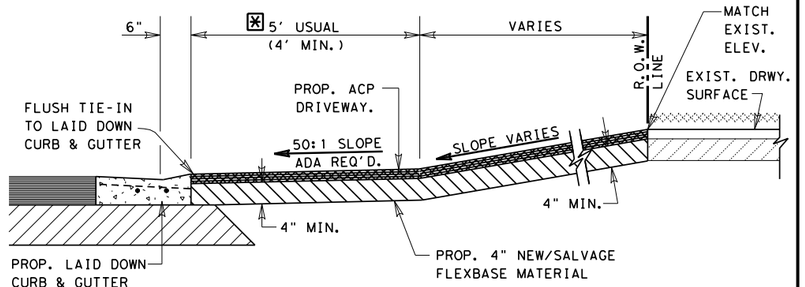
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



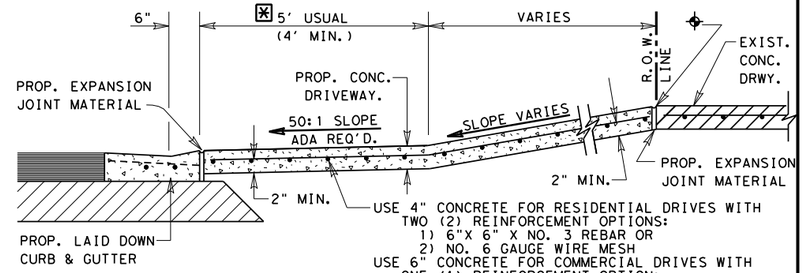
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



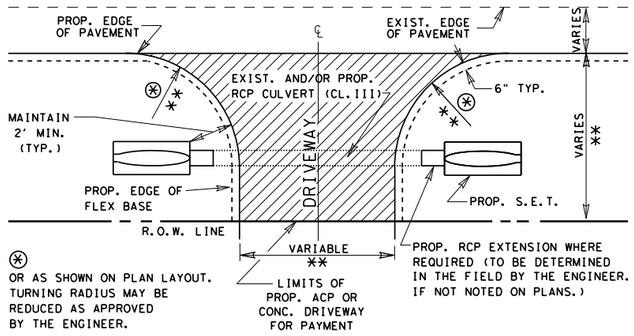
TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

⌖ CONC. SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

☒ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER

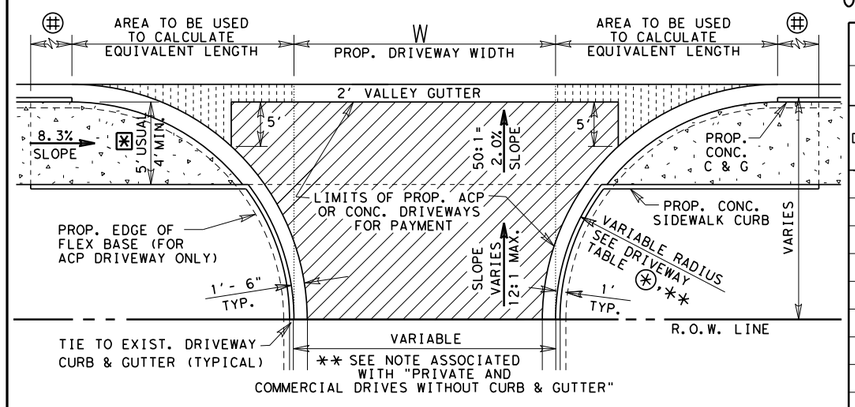


⊛ OR AS SHOWN ON PLAN LAYOUT. TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES
N.T.S.

☒ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⌗ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 OR X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY PB-1

EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH \ 114#/SY ACP.

CONCRETE (RESIDENTIAL)

EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ. YD.

CONCRETE (COMMERCIAL)

EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ. YD.

STATE OF TEXAS ROBERTO MORENO 60910 LICENSED PROFESSIONAL ENGINEER 5/30/19

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MCi Moreno Cardenas Inc. — Leaders in Project Delivery & Performance — TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

SHEET 3 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		92
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 2:53:02 PM aurora

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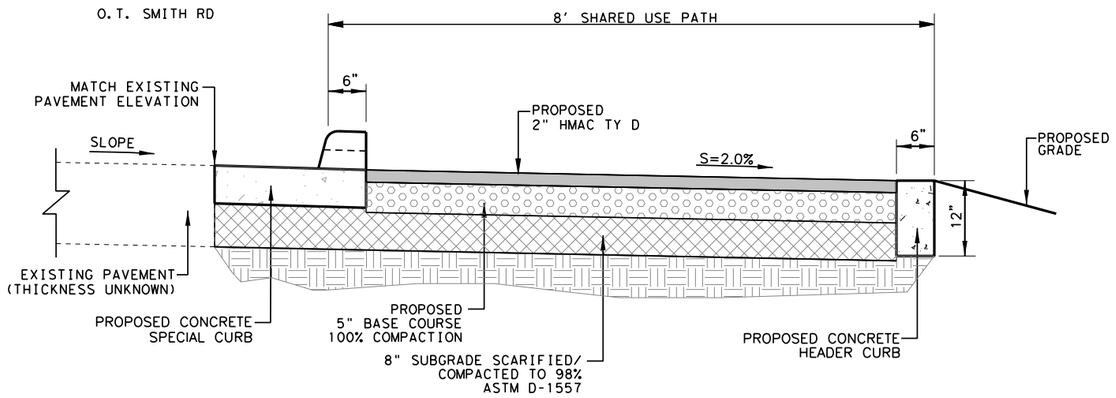
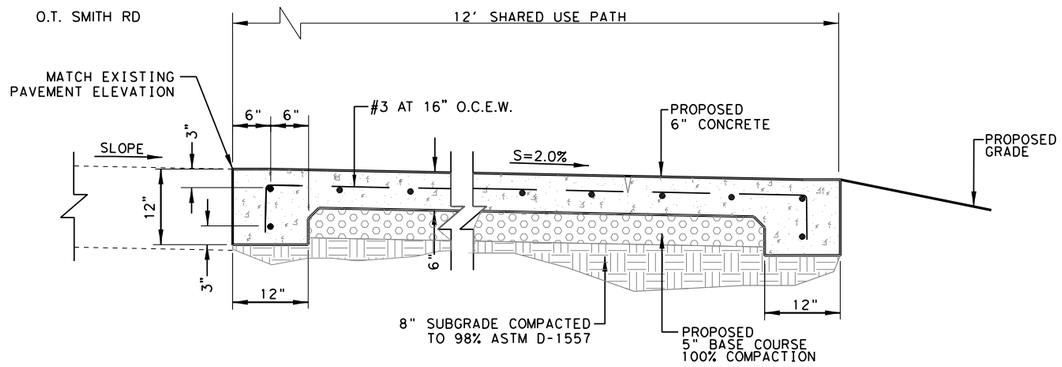


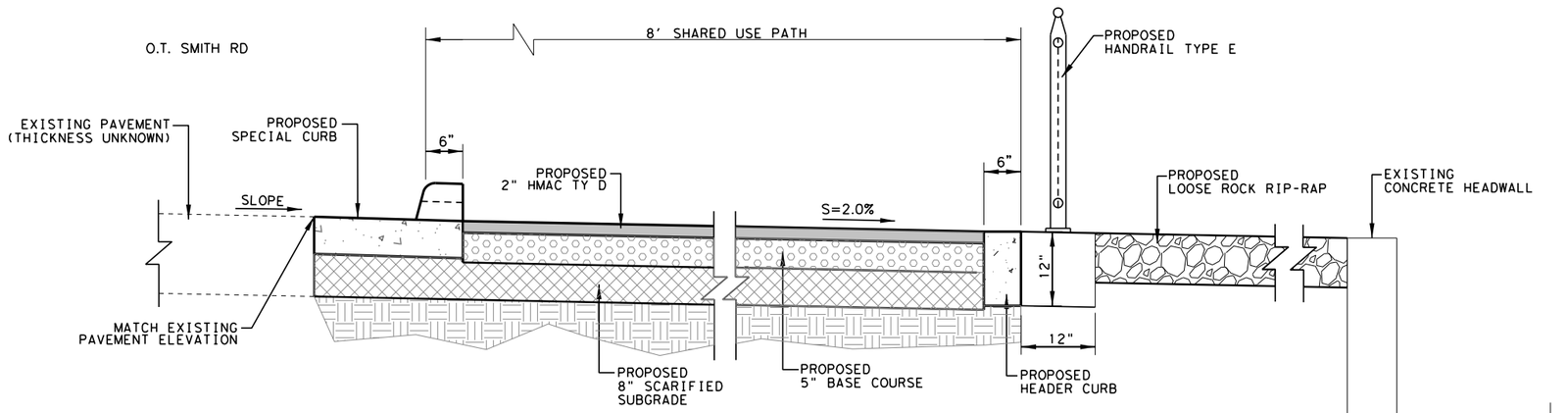
1/93 PROPOSED ASPHALT SHARED USE PATH WITH HEADER AND SPECIAL CURB SECTION

SCALE: 1/2"=1'-0"



2/93 PROPOSED REINFORCED CONCRETE SHARED USE PATH SECTION

SCALE: 1/2"=1'-0"



3/93 PROPOSED ASPHALT SHARED USE PATH WITH HEADER AND SPECIAL CURB SECTION

SCALE: 1/2"=1'-0"

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TYPICAL SECTIONS

SHEET 1 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		93
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 3:41:49 PM aurora

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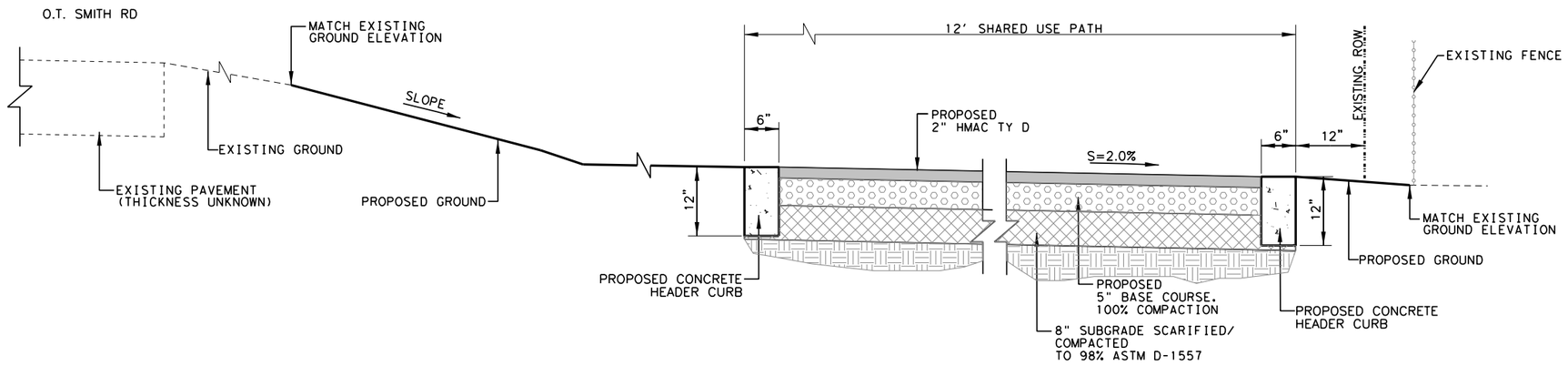
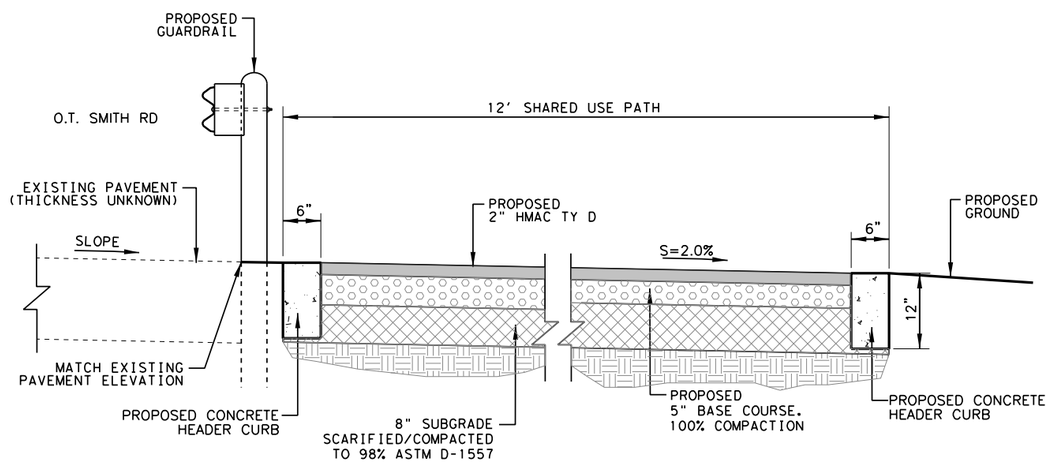


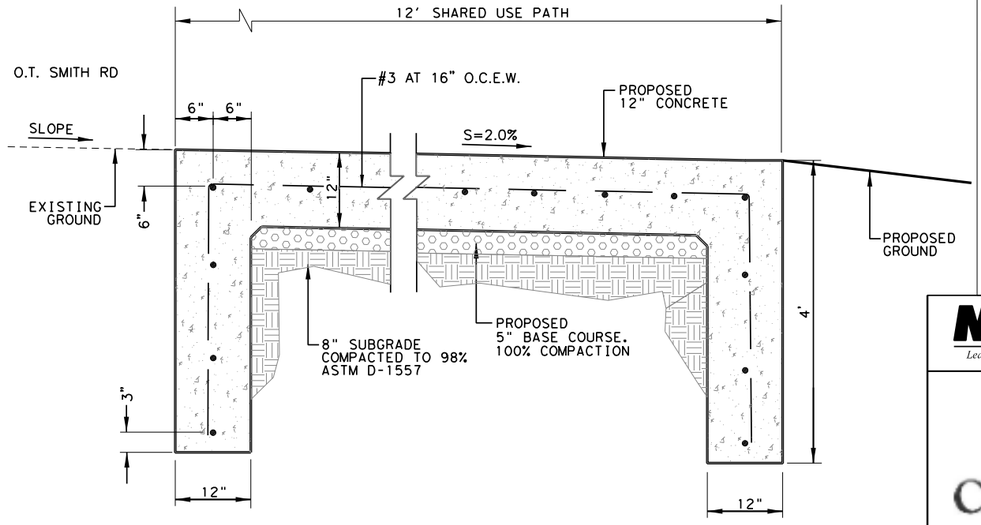
4/94 **PROPOSED ASPHALT SHARED USE PATH SECTION WITH HEADER CURB**

SCALE: 1/2"=1'-0"



5/94 **PROPOSED ASPHALT SHARED USE PATH WITH HEADER CURB SECTION**

SCALE: 1/2"=1'-0"



6/94 **PROPOSED REINFORCED CONCRETE SHARED USE PATH SECTION**

SCALE: 1/2"=1'-0"

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000564

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

TYPICAL SECTIONS

SHEET 2 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		94
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

5/29/2019 3:44:07 PM aurora

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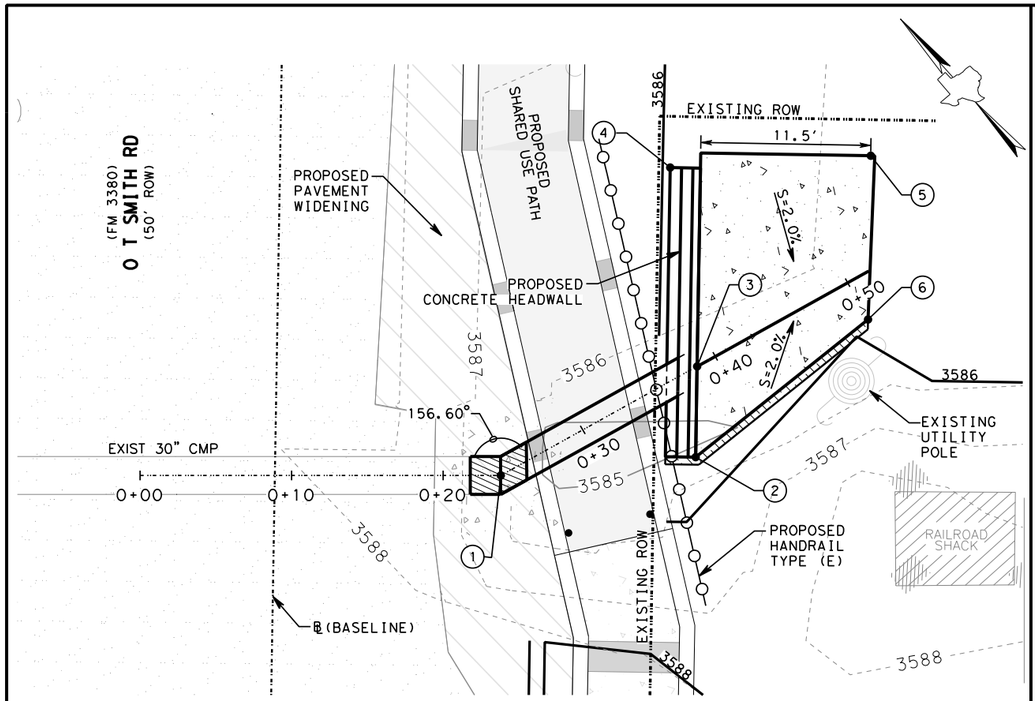
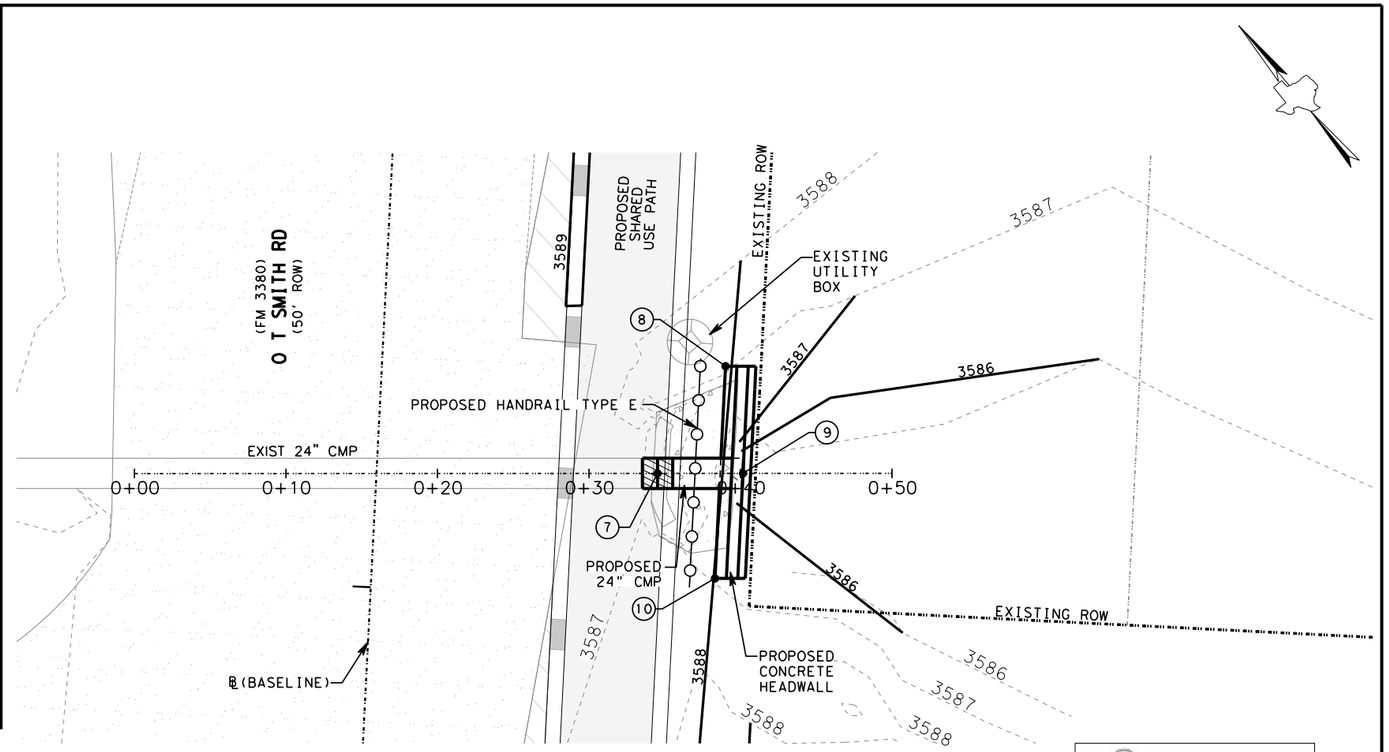


PLAN



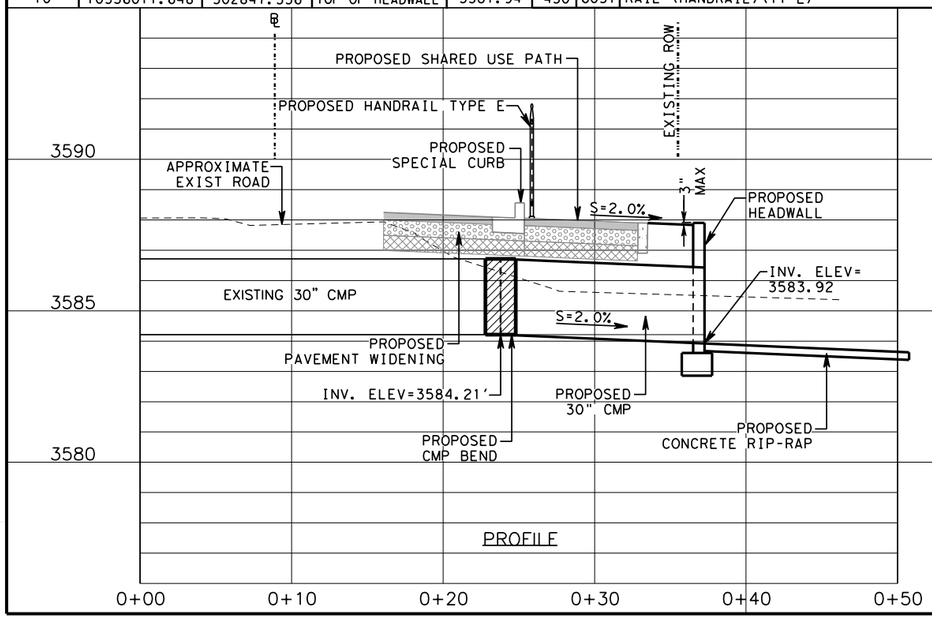
PLAN

HORIZONTAL & VERTICAL CONTROL DATA

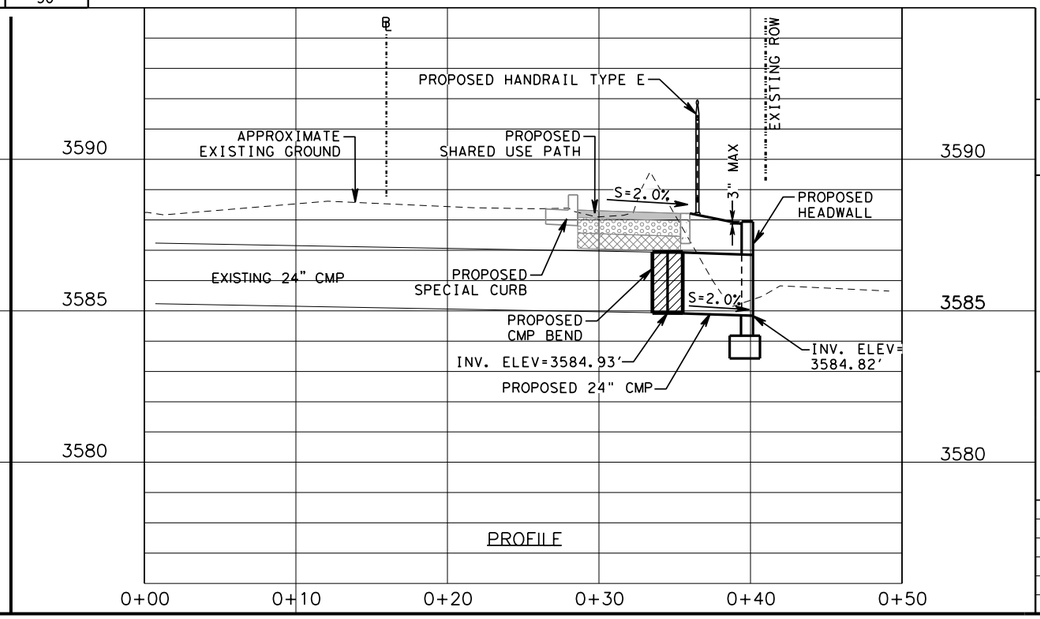
POINT NO.	NORTHING	EASTING	DESCRIPTION	ELEVATION
1	10535961.570	502790.392	INVERT	3584.21
2	10535953.866	502800.765	TOP OF HEADWALL	3587.91
3	10535958.246	502804.839	INVERT	3587.79
4	10535969.200	502812.295	TOP OF HEADWALL	3587.91
5	10535960.738	502822.861	TOP OF CONCRETE	3583.80
6	10535953.008	502815.294	TOP OF CONCRETE	3583.71
7	10536019.390	502849.112	INVERT	3594.93
8	10536021.913	502857.103	TOP OF HEADWALL	3587.94
9	10536015.492	502853.862	INVERT	3584.82
10	10536011.648	502847.556	TOP OF HEADWALL	3587.94

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
432	6001	RIPRAP (CONC)(4 IN)	CY	2
460	6003	CMP (GAL STL 24 IN)	LF	8
460	6004	CMP (GAL STL 30 IN)	LF	15
466	6097	HEADWALL (CH-PW-O) (DIA=24 IN)	EA	1
466	6132	HEADWALL (CH-PW-S) (DIA=30 IN)	EA	1
450	6051	RAIL (HANDRAIL)(TY E)	LF	30



PROFILE



PROFILE

0 5 10
SCALE: 1"=10'

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Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

PROPOSED CMP EXTENSION PLAN & PROFILE

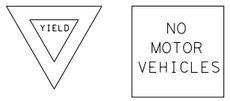
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	95

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
75	1	W11-15		30x30	X		10BWG	1	SA	P		
	2	W11-15P	TRAIL X-ING	30x24								
75	3	R5-3		24x24	X		10BWG	1	SA	P		
	4	R1-2	NO MOTOR VEHICLES / YIELD (BACK TO BACK)	18x18x18								
75	5	W2-1		24x24	X		10BWG	1	SA	P		
75	6	R1-2		18x18x18	X		10BWG	1	SA	P		
	7	R5-3	YIELD / NO MOTOR VEHICLES (BACK TO BACK)	24x24								
75	8	R5-3		24x24	X		10BWG	1	SA	P		
	9	R1-2	NO MOTOR VEHICLES / YIELD (BACK TO BACK)	18x18x18								
75	10	W11-15		30x30	X		10BWG	1	SA	P		
	11	W11-15P	TRAIL X-ING	30x24								
75	12	W2-1		24x24	X		10BWG	1	SA	P		
75	13	W2-1		24x24	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
4-16	DIST	COUNTY		SHEET NO.
8-16	ELP	EL PASO		96

18

DATE: $DATE$ $TIME$
FILE: $FILE$

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
76	14	R1-2	YIELD / NO MOTOR VEHICLES (BACK TO BACK)	18x18x18	X		10BWG	1	SA	P		
	15	R5-3		24x24								
76	16	R5-3	NO MOTOR VEHICLES / YIELD (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	17	R1-2		18x18x18								
76	18	W11-15	TRAIL X-ING	30x30	X		10BWG	1	SA	P		
	19	W11-15P		30x24								
76	20	W2-1		24x24	X		10BWG	1	SA	P		
76	21	W2-1		24x24	X		10BWG	1	SA	P		
76	22	R1-2	YIELD / NO MOTOR VEHICLES (BACK TO BACK)	18x18x18	X		10BWG	1	SA	P		
	23	R5-3		24x24								
76	24	R5-3	NO MOTOR VEHICLES / YIELD (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	25	R1-2		18x18x18								

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

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STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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Texas Department of Transportation

Traffic Operations Division Standard

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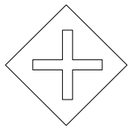
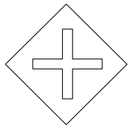
FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
4-16	DIST	COUNTY		SHEET NO.
8-16	ELP	EL PASO		97

18

DATE: $DATE$ $TIME$
FILE: $FILE$

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
76	26 27	W11-15 W11-15P		30x30 30x24	X		10BWG	1	SA	P		
76	28	W5-4a		18x18	X		10BWG	1	SA	P		
76	29	W2-1		24x24	X		10BWG	1	SA	P		
77	30	W2-1		24x24	X		10BWG	1	SA	P		
77	31 32	R1-2 R5-3	 (BACK TO BACK)	18x18x18 24x24	X		10BWG	1	SA	P		
77	33 34	R5-3 R1-2	 (BACK TO BACK)	24x24 18x18x18	X		10BWG	1	SA	P		
77	35 36	W11-15 W11-15P		30x30 30x24	X		10BWG	1	SA	P		
77	37	W2-1		24x24	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
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©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
4-16	DIST	COUNTY		SHEET NO.
8-16	ELP	EL PASO		98

18

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DATE: $DATE$ $TIME$
FILE: $FILE$

DATE: $DATE$ $TIME$
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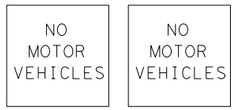
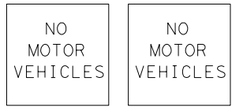
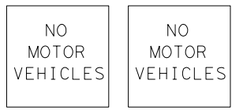
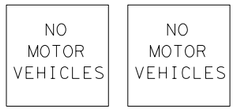
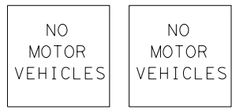
SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
77	38	W15-1		30x30	X		10BWG	1	SA	P		
78	39	R8-3		24x24	X		10BWG	1	SA	P		
78	40	W5-4a		18x18	X		10BWG	1	SA	P		
78	41 42	R5-3 R5-3	 (BACK TO BACK)	24x24 24x24	X		10BWG	1	SA	P		
79	43 44	R5-3 R5-3	 (BACK TO BACK)	24x24 24x24	X		10BWG	1	SA	P		
80	45 46	R5-3 R5-3	 (BACK TO BACK)	24x24 24x24	X		10BWG	1	SA	P		
81	47 48	R5-3 R5-3	 (BACK TO BACK)	24x24 24x24	X		10BWG	1	SA	P		
82	49 50	R5-3 R5-3	 (BACK TO BACK)	24x24 24x24	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
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Texas Department of Transportation

Traffic Operations Division Standard

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SOSS

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© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
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	ELP	EL PASO		99

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)					BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		TY = TYPE
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY N TY S
83	51	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	52	R5-3		24x24								
83	53	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	54	R5-3		24x24								
84	55	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	56	R5-3		24x24								
84	57	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	58	R5-3		24x24								
85	59	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	60	R5-3		24x24								
85	61	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	62	R5-3		24x24								
86	63	R5-3	NO MOTOR VEHICLES / NO MOTOR VEHICLES (BACK TO BACK)	24x24	X		10BWG	1	SA	P		
	64	R5-3		24x24								

ALUMINUM SIGN BLANKS THICKNESS	
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FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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4-16	DIST	COUNTY		SHEET NO.
8-16	ELP	EL PASO		100

18

DATE: $DATE$ $TIME$
FILE: $FILE$

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DATE: $DATE$ $TIME$
FILE: $FILE$

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
86	65	R5-3	NO MOTOR VEHICLES	24x24	X		10BWG	1	SA	P		
	66	R5-3	NO MOTOR VEHICLES (BACK TO BACK)	24x24								
87	67	R5-3	NO MOTOR VEHICLES	24x24	X		10BWG	1	SA	P		
	68	R5-3	NO MOTOR VEHICLES (BACK TO BACK)	24x24								
87	69	R5-3	NO MOTOR VEHICLES	24x24	X		10BWG	1	SA	P		
	70	R5-3	NO MOTOR VEHICLES (BACK TO BACK)	24x24								
88	71	R5-3	NO MOTOR VEHICLES	24x24	X		10BWG	1	SA	P		
	72	R5-3	NO MOTOR VEHICLES (BACK TO BACK)	24x24								
88	73	R5-3	NO MOTOR VEHICLES	24x24	X		10BWG	1	SA	P		
	74	R5-3	NO MOTOR VEHICLES (BACK TO BACK)	24x24								
88	75	W8-3	PAVEMENT ENDS	18x18	X		10BWG	1	SA	P		
88	76	W8-3	PAVEMENT ENDS	18x18	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
4-16	DIST	COUNTY		SHEET NO.
8-16	ELP	EL PASO		101

18

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DATE:
FILE:

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

DOT #: 742-906F
Crossing Type: AT GRADE/PEDESTRIAN
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD
Operating RR Company at Track: UNION PACIFIC RAILROAD
RR MP: 794.32
RR Subdivision: VALENTINE
City: TORNILLO
County: EL PASO
CSJ at this Crossing: 0924-06-560
Highway/Roadway name crossing the railroad: O.T. SMITH ROAD
# of regularly scheduled trains per day at this crossing: 40+
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: < 10%

Scope of Work at this Crossing to Be Performed by State Contractor:
TO CONSTRUCT A SHARED USE PATH ALONG O.T. SMITH ROAD FROM ALAMEDA AVE., SOUTH OF THE UNION PACIFIC RAILROAD TRACKS, TO JUST SOUTHWEST OF INTERSTATE HIGHWAY 10 (IH-10) IN THE COMMUNITY OF TORNILLO, TEXAS, AN APPROXIMATE LENGTH OF 2.45 MILES. CONSTRUCTION WORK INCLUDES CULVERT EXTENSION, HEADWALL REPLACEMENT, AND FILL.

Scope of Work at this Crossing to Be Performed by Railroad Company:
RAILROAD TO PROVIDE ALL MATERIALS AND LABOR FOR INSTALLATION OF ADDITION CROSSING SURFACE TO ACCOMMODATE SIDEWALK.

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

INSTALLATION OF DRAINAGE FACILITIES INCLUDING EARTHWORK ITEMS

III. FLAGGING

of Days of Railroad Flagging Expected: 30 DAYS

On this project, night or weekend flagging is:

☒ Expected
☐ Not Expected

Flagging services will be provided by:

☐ Railroad Company: TxDOT will pay flagging invoices
☒ Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The railroad requires a 30 day notice if their flaggers are to be utilized. If contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

RailPros
(877) 315-0513
upflag@railprosfs.com

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

☒ Required
☐ Not Required

Coordinate with TxDOT for any work to be performed by the railroad company. TxDOT must issue a work order for any work done by the rail road company prior to the work being performed.

V. RAILROAD INSURANCE REQUIREMENTS

Contractor shall provide the proper insurance as shown in the table below.

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several railroad companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

No direct compensation will be made to the contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000 combined single limit
Railroad Protective Liability	** / **

VI. CONTRACTOR'S RIGHT-OF-ENTRY (ROE) AGREEMENT

On this project, an ROE agreement is:

☐ Not Required
☒ Required: TxDOT to assist in obtaining (see Item 5, Article 8.3)

With the following railroad companies: UNION PACIFIC RAILROAD

☐ Required: Contractor to obtain (see Item 5, Article 8.4)

With the following railroad companies: _____

To view previously approved ROE agreement templates agreed upon between the State and railroad company, see:

http://www.txdot.gov/inside-txdot/division/traffic/samples.html

Approved ROE agreement templates are not to be modified by the Contractor.

Contractor shall not operate within railroad rights of way without an executed Construction & Maintenance agreement between the state and the railroad and an executed ROE agreement between the contractor and the railroad if required on project.

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

☐ Not Required
☒ Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call Union Pacific Railroad Emergency Line
at 888-877-7267
Location: DOT 742-906F
RR Milepost 794.32 Valentine Subdivision

Texas Department of Transportation

Traffic Operations Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:		CK:
©TxDOT June 2014	CONT	SECT	JOB		HIGHWAY
REVISIONS	0924	06	560		CS
10/2015	DIST	COUNTY			SHEET NO.
	ELP	EL PASO			101A

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the Right-of-Way and/or properties of the Railroad Company and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right-of-Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right-Of-Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right-Of-Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received writtern Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, FRA (Federal Railway Administration) and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of Railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be persued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the Contract Site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a Railroad flag person will be required. At the direction of the Railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right-of-Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right-of-Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right-of-Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.18 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right-of-Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right-of-Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

A. Complete the Railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on Railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to the Railroad specific contractor right of entry for training information."

B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right-of-Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF), (UPRR) and 14' - 0" (KCS), horizontal from centerline of track
B. 22' - 0" (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement until receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

Texas Department of Transportation — Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		101B

DATE:
FILE:

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right-of-Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractor's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the Project Site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other Railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to Railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger Railroad facilities or operations.

D. During any contractor's operations when, in the opinion of the Railroad Designated Representative, Railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around Railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

   UPRR 1-800-336-9193
   7:00 AM to 9:00 PM CST Monday-Friday except holidays,
   staffed 24 hrs/day for emergencies
   48 hrs notice required

   BNSF 1-800-533-2891
   24 hour number
   5 working days notice required

   KCS 1-800-344-8377
   Texas One Call, a 24 hour number
   48 hrs notice required, excluding weekends and holidays

   If a telecommunications system is buried anywhere on or near Railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near Railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor-assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4" vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the RIGHT OF ENTRY agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor work and at least 30 working days in advance of any Contractor work in which any person or equipment will be within 25 feet of nearest rail or as specifice in Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

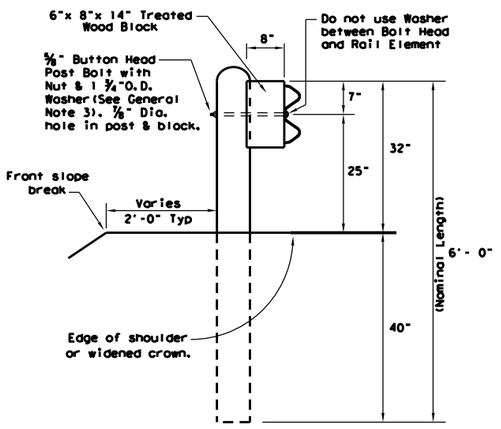
When work is complete, remove all tools, implements, and other materials brought into Railroad Right-of-Way and leave the Right-of-Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

DATE:
FILE:

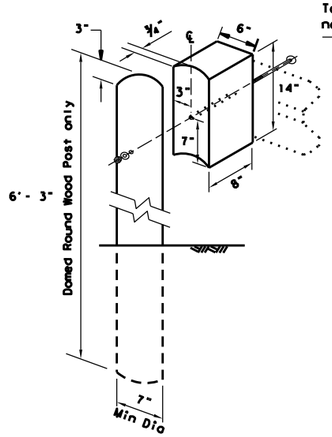
Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

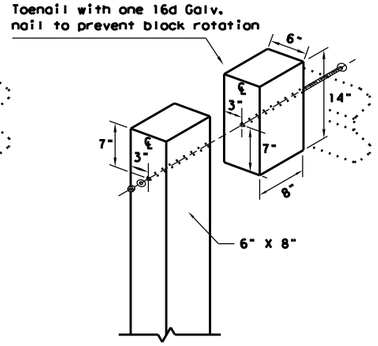
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		101C



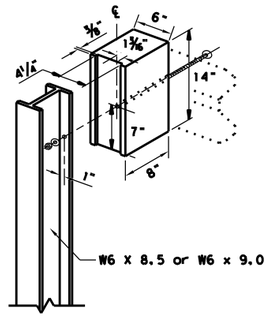
TYPICAL POST



WOOD BLOCK TO ROUND WOOD POST



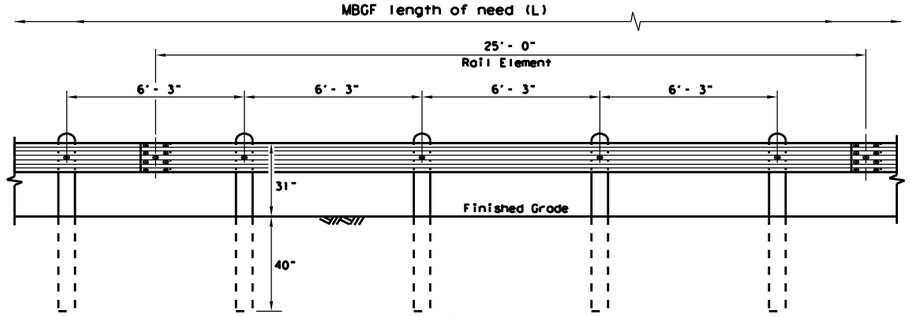
WOOD BLOCK TO RECTANGULAR WOOD POST



WOOD BLOCK TO STEEL POST

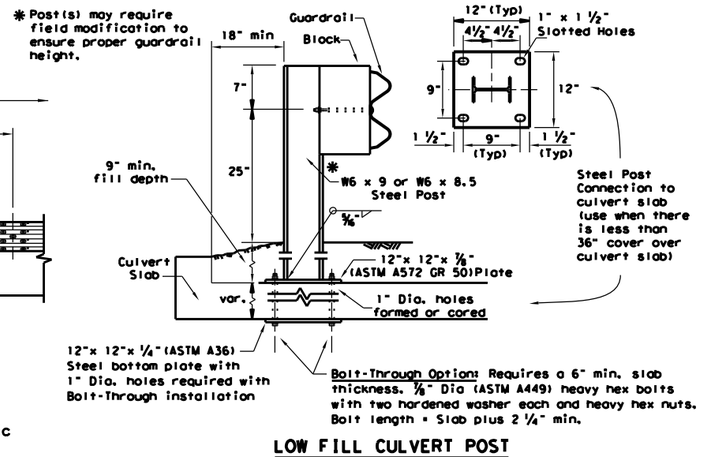
GENERAL NOTES

1. The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of MBGF shall be shown in the plans or as directed by the Engineer. Steel posts to be galvanized in accordance with Item 445, "Galvanizing."
2. Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'- 0", or 12'- 6" (nom.) lengths. Rail elements may have slotted holes at 3'-1½" C-C or 6'-3" C-C. A special length of rail may be manufactured to accommodate the downstream anchor terminal (DAT) and the transition sections of guardrail.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563). Thrie beam "connection" ⅞" dia. (ASTM A325) hex bolts shall be of sufficient length to extend through the full thickness of the rail, washers, and nuts.
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
5. Crown shall be widened to accommodate the Metal Beam Guard Fence.
6. The lateral approach to the guard fence, shall have a maximum slope of 1V:10H.
7. If shown elsewhere in the plans or as directed by the Engineer, the guard fence may be flared at a rate of 25:1 or flatter.
8. Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the rail. Rail placed over curbs shall be installed so that the post bolt is located approximately 25 inches above the gutter pan or edge of shoulder.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18", drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever maybe less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Posts shall not be set in concrete, of any depth.
11. Special fabrication will be required at installations having a curvature of less than 150 ft. radius.
12. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL may furnish composite material posts and/or blocks.
13. For posts located partially or wholly between precast box culvert units, the use of a cast-in-place concrete closure between boxes is required. See Detail "A" on Bridge Standard SCP-MD.



ELEVATION
MID-SPAN RAIL SPLICE

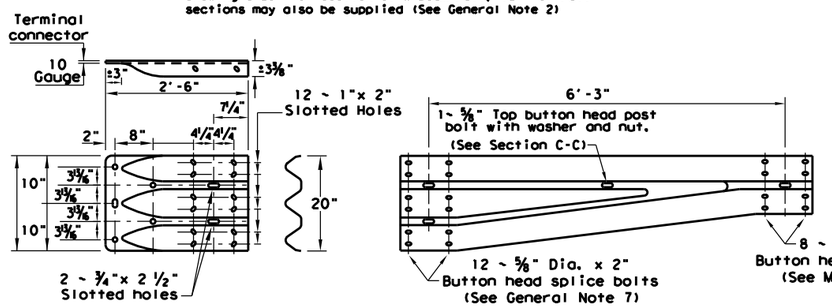
Showing a 25'- 0" section of W-Beam rail, 12'- 6" rail sections may also be supplied (See General Note 2)



LOW FILL CULVERT POST

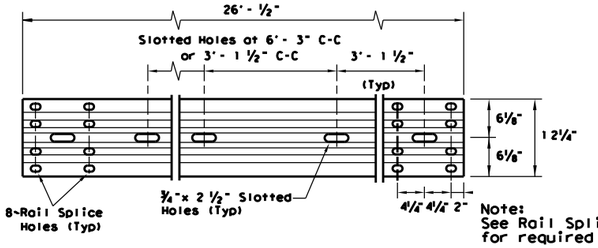
Culverts of 25 ft. or less, see GF(31)LS standard for "Long Span" option.

Epoxy Note:
Epoxy Anchor Option: This option may only be used if the culvert slab is 8" min. thick. Threaded anchor rods must be ⅞" Dia. ASTM A449 or A193 Grade B7 with heavy hex nut, and one hardened washer each. Embed anchor rods 6" with Hilti HIT RE 500 epoxy adhesive. Other Type III Class C epoxy adhesives meeting the requirements of DMS-6100, "Epoxies and Adhesives", may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT RE 500 with the same embedment depth and threaded rod dia. Follow the manufacturer's requirements for installing epoxied threaded rods. Extend rods ¼" min. beyond nut.

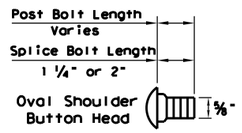


THRIE-BEAM TERMINAL CONNECTION
(SEE GENERAL NOTES 6 & 7 FOR REQUIRED HARDWARE)

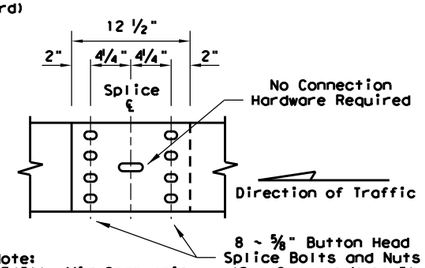
NON-SYMMETRICAL TRANSITION TO W-BEAM (10 Gauge)



ELEVATION 25'- 0" (NOM.) W-BEAM SECTION
12'- 6" RAIL SECTIONS MAY ALSO BE SUPPLIED (SEE GENERAL NOTE 2)

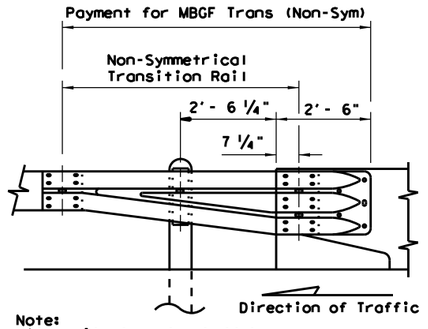


BUTTON HEAD BOLT
Post and Splice Bolts (See General Note 3)



Note:
GF(31), Mid-Span rail splices are required with 6'-3" post spacings.

MID-SPAN
RAIL SPLICE DETAIL



Note:
All rail elements shall be lapped in the direction of adjacent traffic.

DOWNSTREAM RAIL ATTACHMENT

Texas Department of Transportation

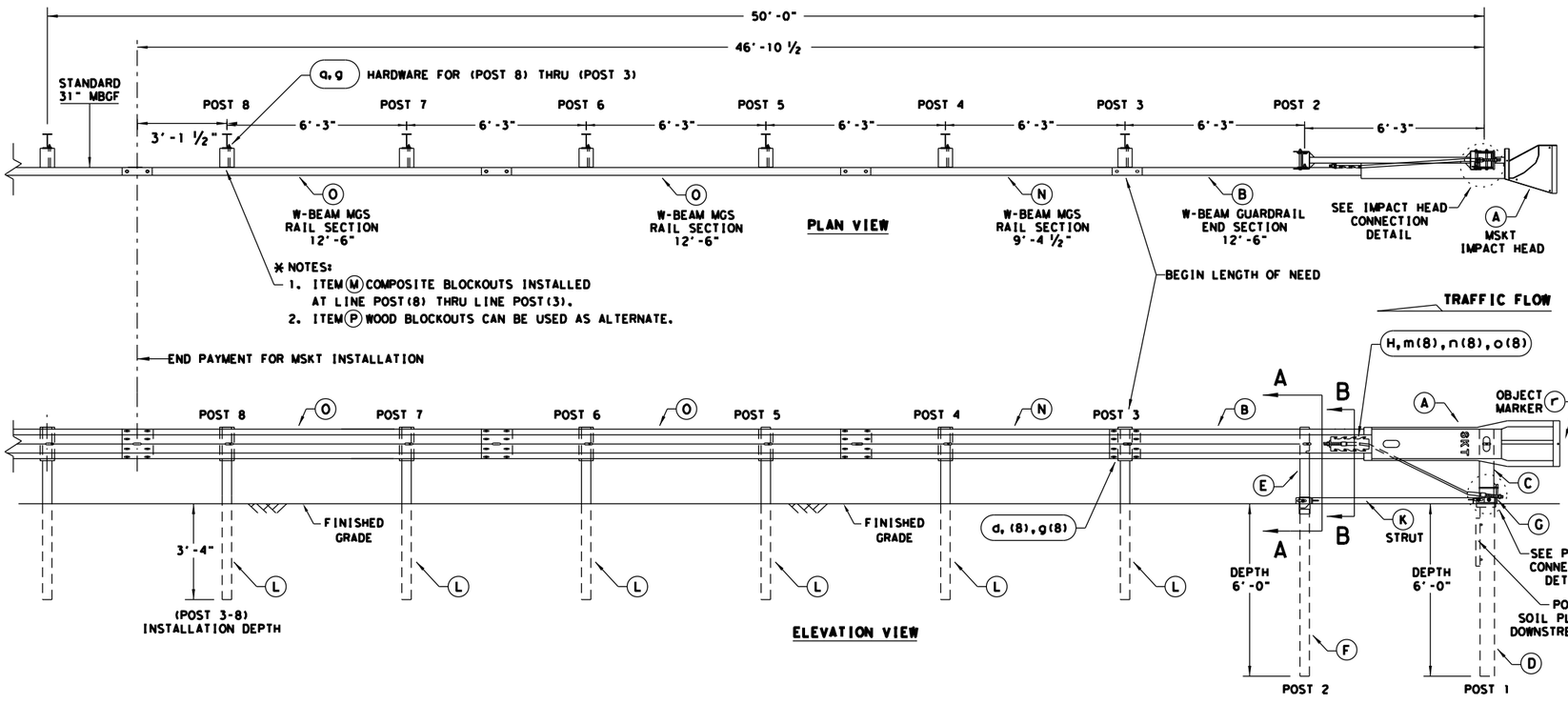
Design Division Standard

METAL BEAM GUARD FENCE

GF(31)-14

FILE: gf3114.dgn	DN: TxDOT	CK: AM	DW: VP	CK: CGL
©TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		102

DATE: $DATE$
FILE: $FILE$



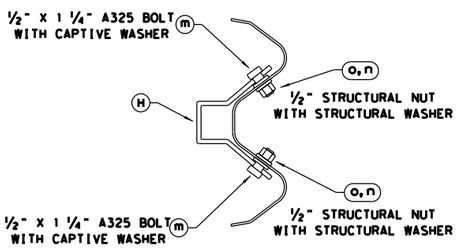
GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-062717).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
7. A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
8. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
14. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

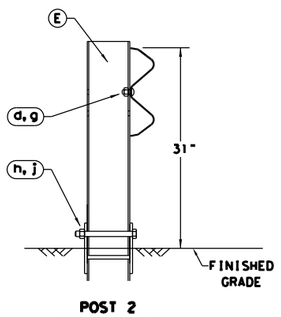
ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X ⅛" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 ½")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
		SMALL HARDWARE	
a	2	⅝" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	⅝" WASHER	W0516
c	2	⅝" HEX NUT	N0516
d	25	⅝" Dia. x 1 ¼" SPLICE BOLT (POST 2)	B580122
e	2	⅝" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	⅝" WASHER	W050
g	33	⅝" Dia. H.G.R NUT	N050
h	1	¾" Dia. x 8 ½" HEX BOLT (GRD A449)	B340854A
j	1	¾" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	½" x 1 ¼" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	½" STRUCTURAL NUTS	N012A
o	8	1 ⅛" O.D. x ⅝" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	⅝" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151

SEE NOTES: *

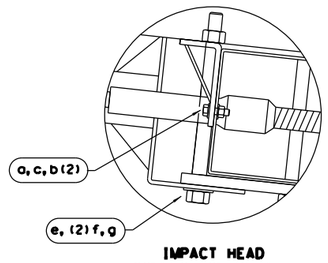
ALTERNATIVE ITEMS NOT SHOWN. * *
* ITEM(P) 8" WOOD-BLOCKOUT
* * ITEM(Q) 25'GUARD FENCE PANEL



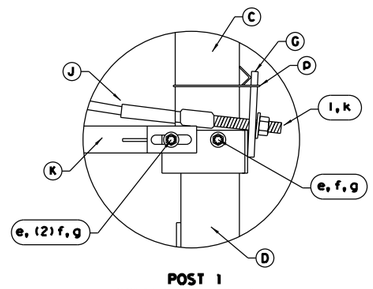
SECTION B-B
ANCHOR BRACKET



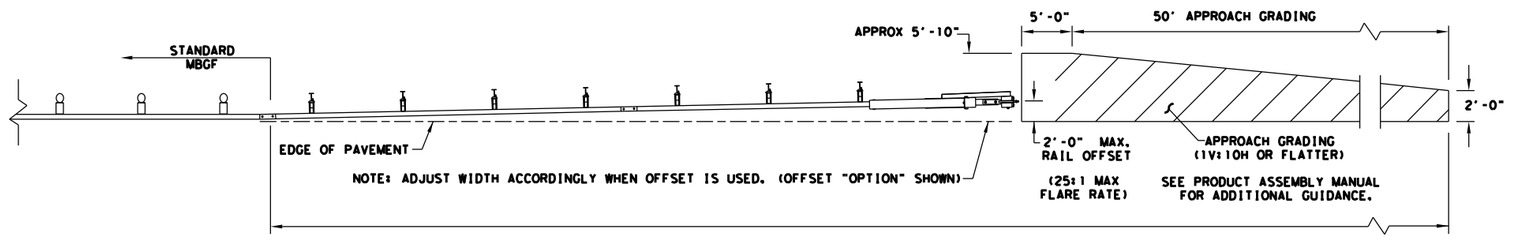
POST 2
SECTION A-A



IMPACT HEAD
CONNECTION DETAIL



POST 1
CONNECTION DETAIL



TRAFFIC FLOW

APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL. IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

SINGLE GUARDRAIL TERMINAL

MSKT-MASH-TL-3

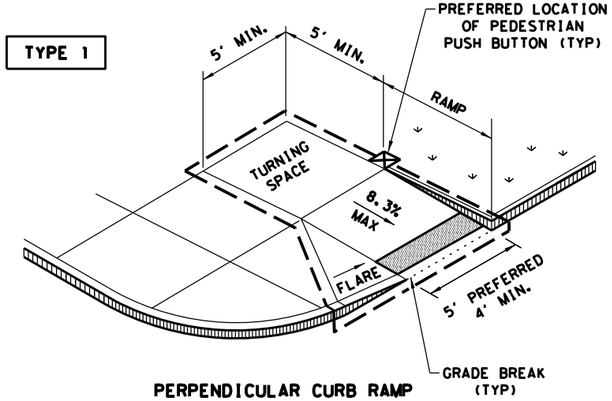
SGT(12S)31-18

FILE: sgt12s3118.dgn	DN:TxDOT	CK:KM	DW:VP	CK:CL	
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0924	06	560	CS	
	DIST	COUNTY		SHEET NO.	
	ELP	EL PASO		103	

DATE: $DATE$
FILE: $FILE$

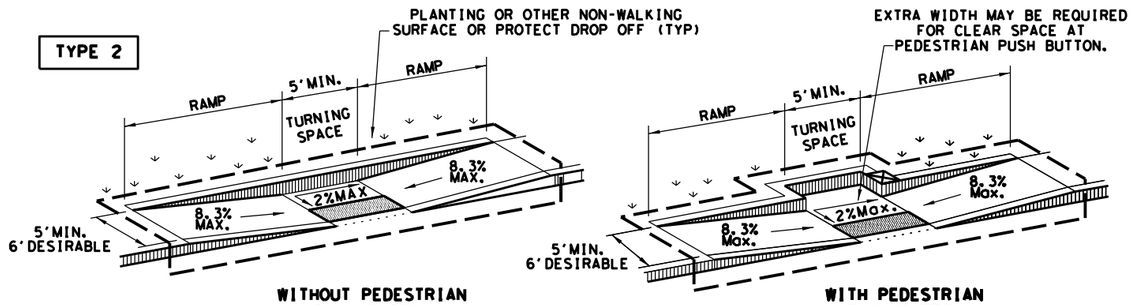
DATE: $DATE$
FILE: $FILE$

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

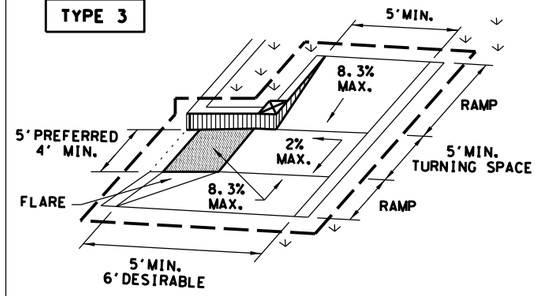


WITHOUT PEDESTRIAN PUSH BUTTON

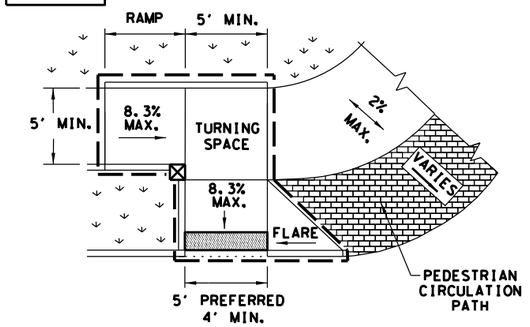
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

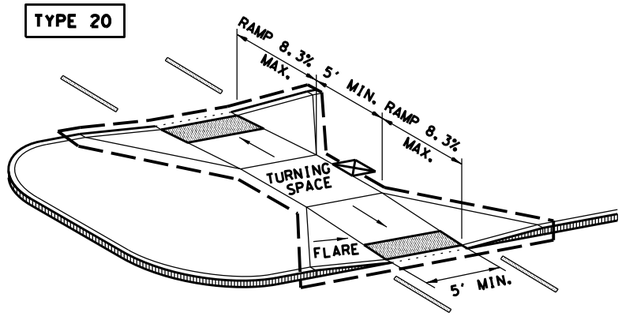


TYPE 6



COMBINATION CURB RAMPS

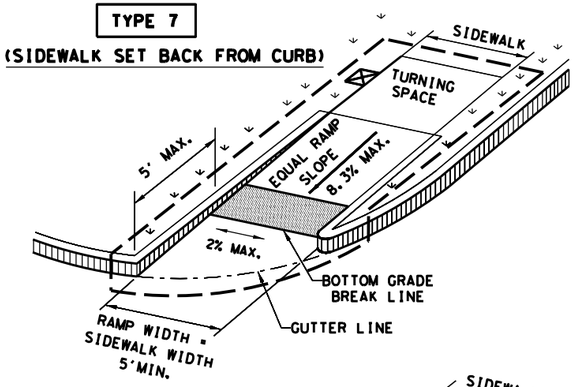
TYPE 20



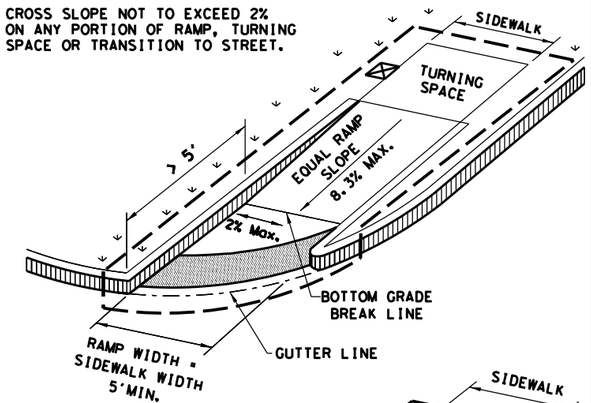
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

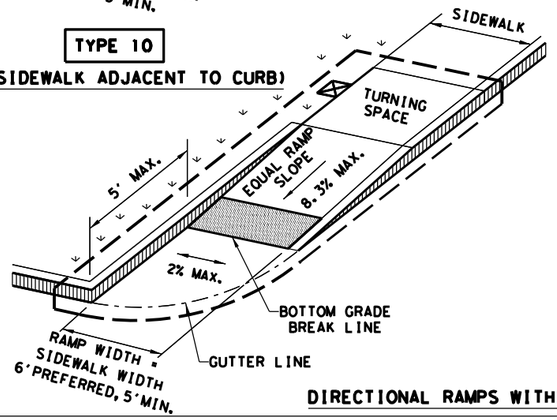


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

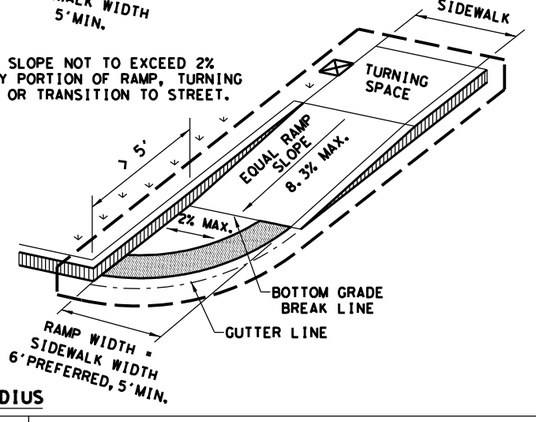


TYPE 10

(SIDEWALK ADJACENT TO CURB)

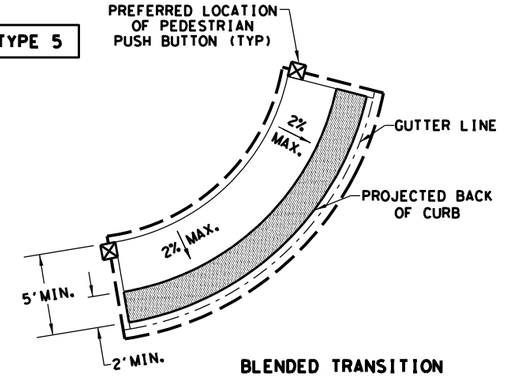


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

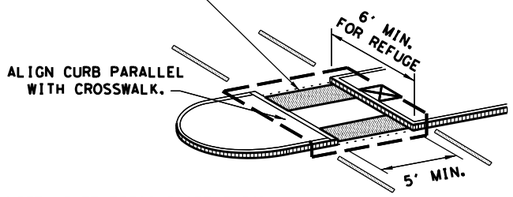
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

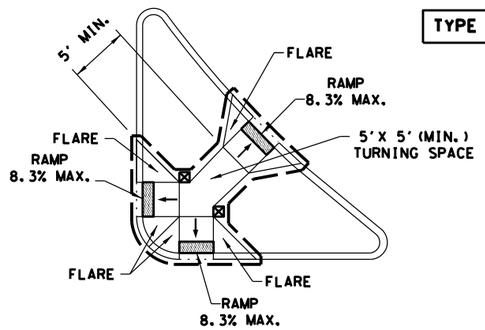
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



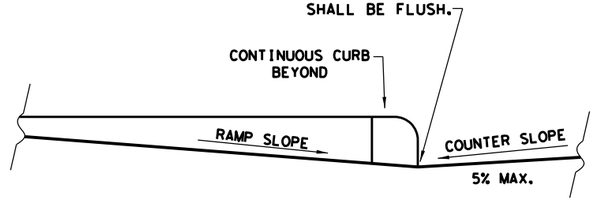
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0924	06	560		CS
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	ELP	EL PASO			104

DATE: $DATE$
FILE: $FILE$

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

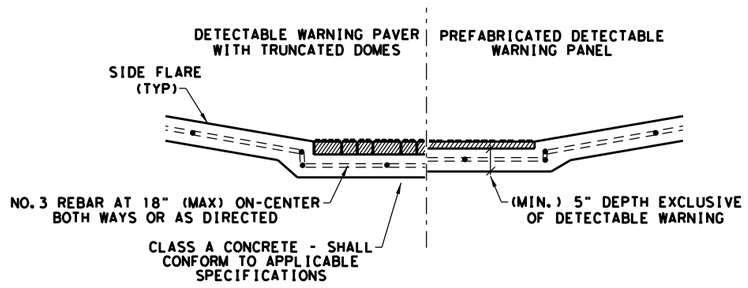
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

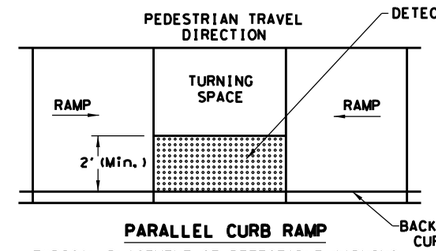
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.



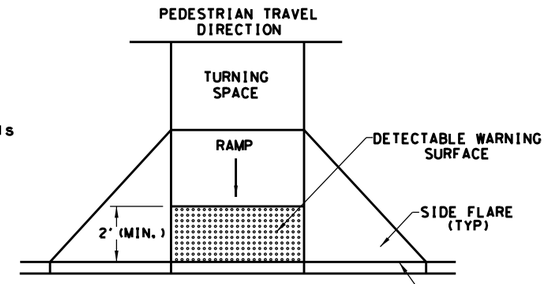
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



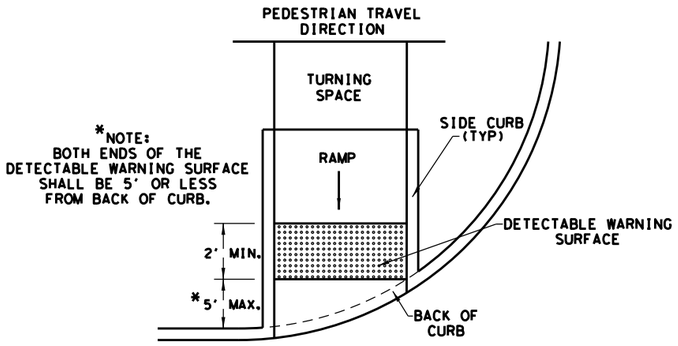
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 2

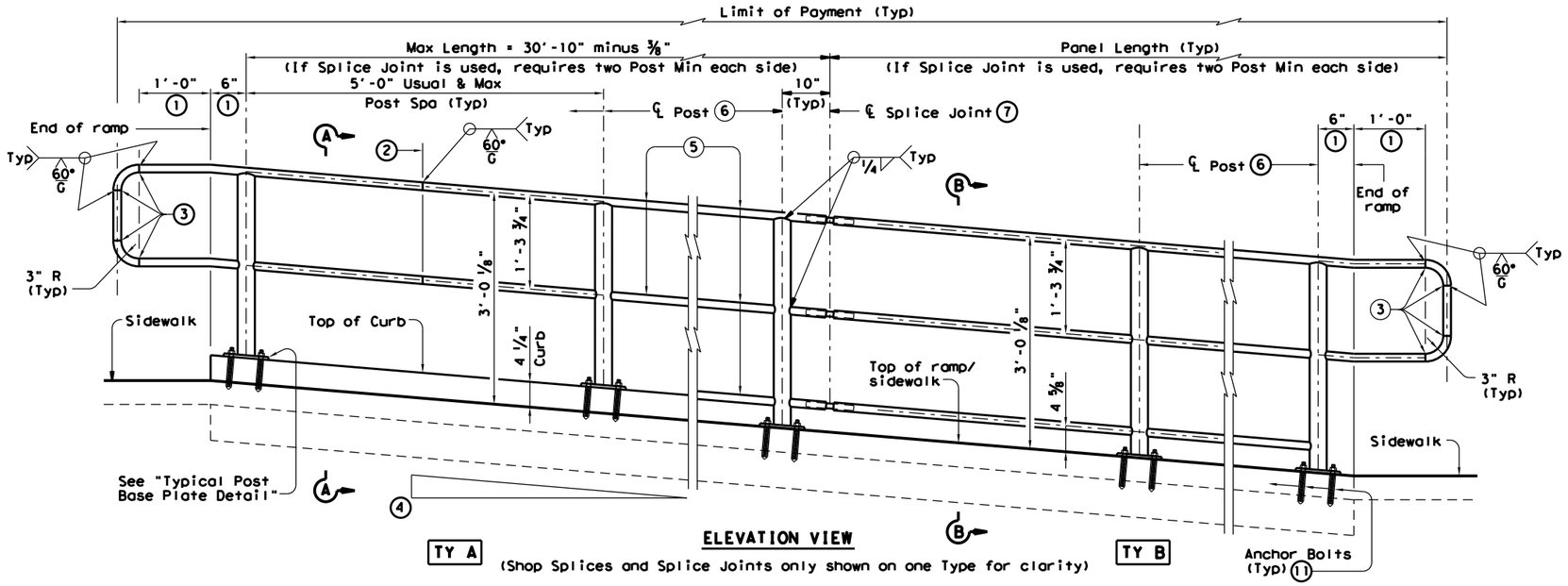
Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

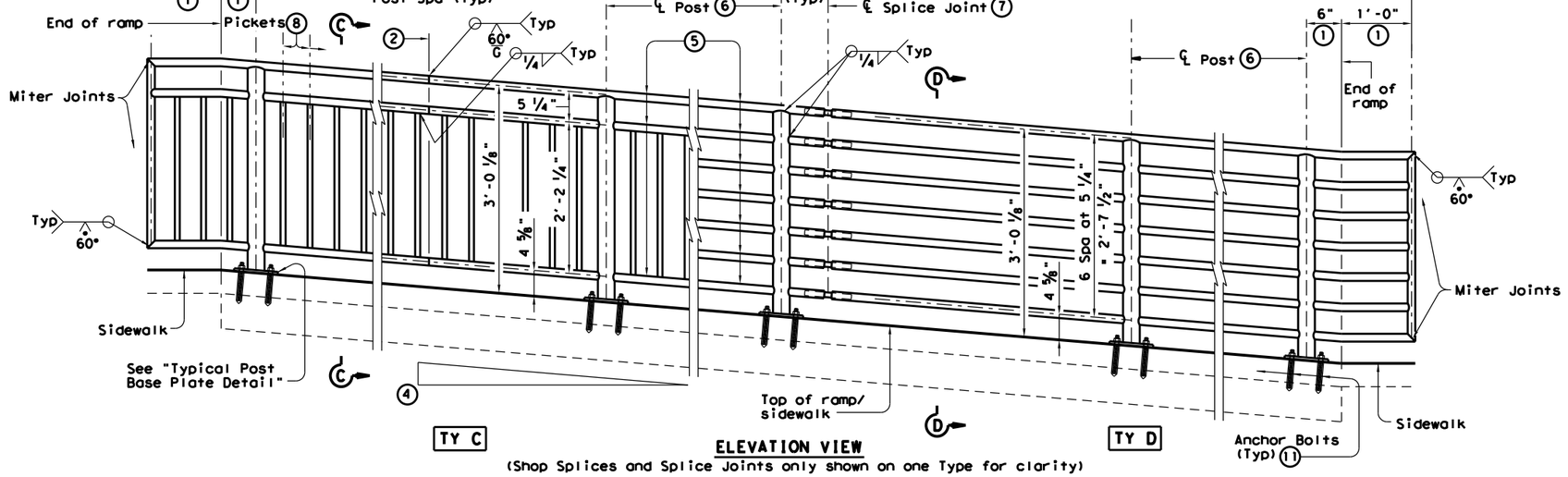
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0924	06	560		CS
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	ELP	EL PASO			105

DATE: $DATE$
FILE: $FILE$



ELEVATION VIEW

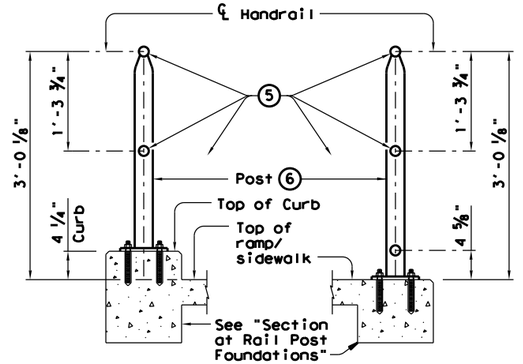
(Shop Splices and Splice Joints only shown on one Type for clarity)



ELEVATION VIEW

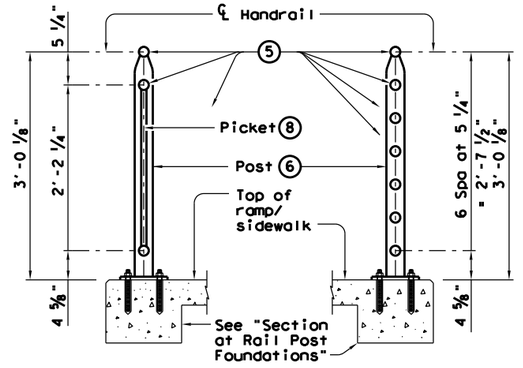
(Shop Splices and Splice Joints only shown on one Type for clarity)

RECOMMENDED USAGE ⑨⑩	
Dropoff Height/ Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A
(Showing Handrail TY A)

SECTION B-B
(Showing Handrail TY B)



SECTION C-C
(Showing Handrail TY C)

SECTION D-D
(Showing Handrail TY D)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

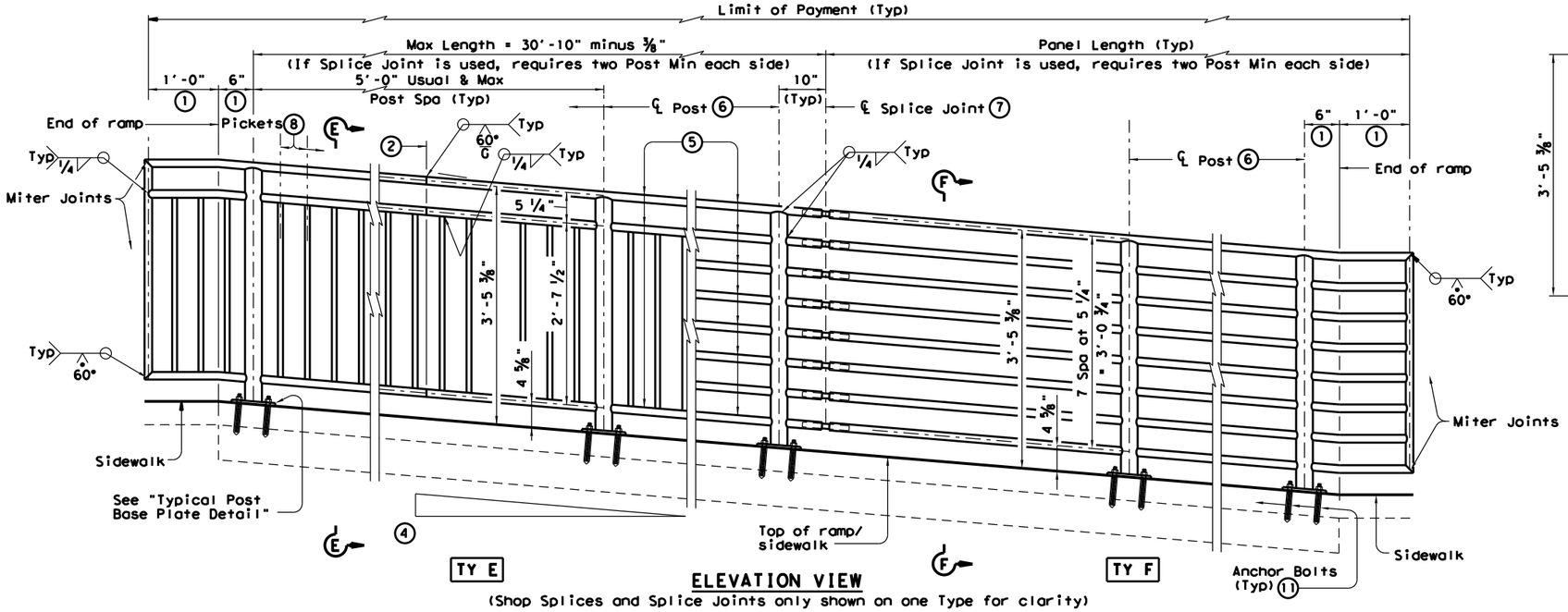
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

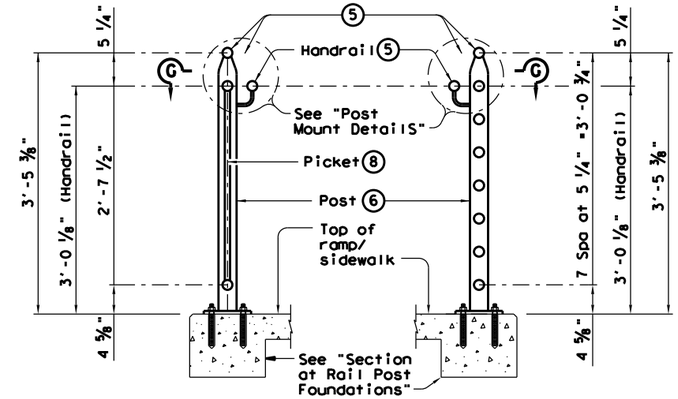
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		106

DATE: $DATE$
FILE: $FILE$



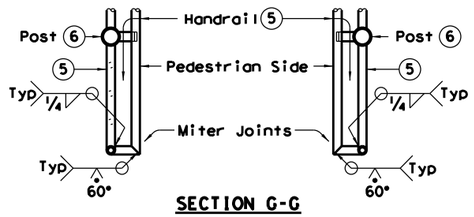
ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

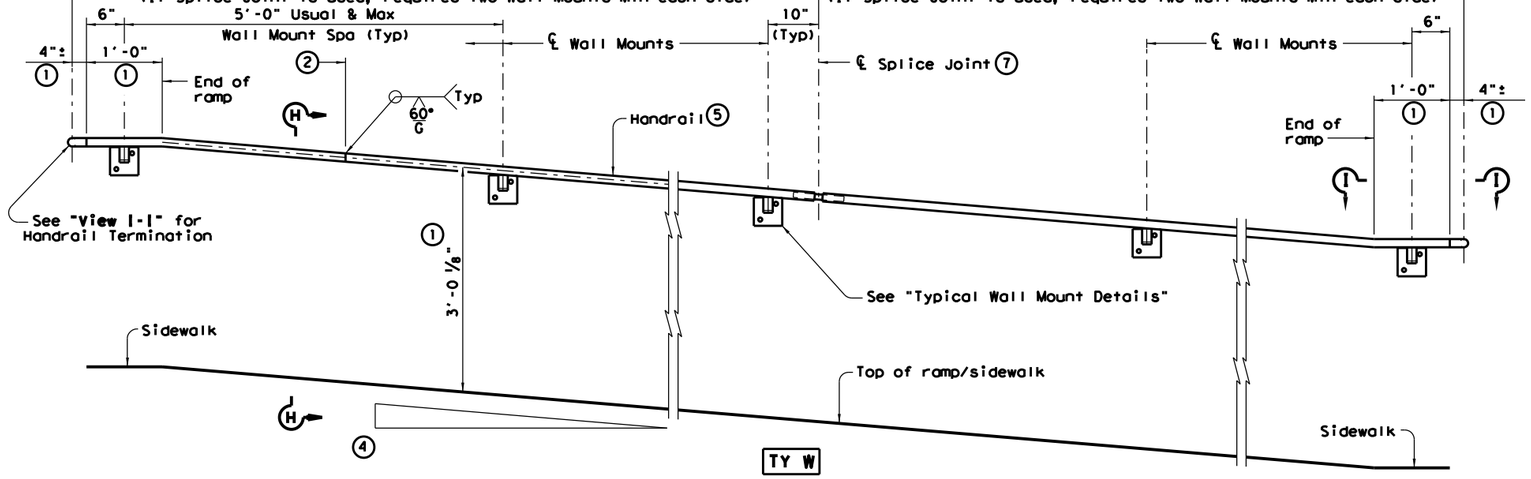


SECTION E-E
(Showing Handrail TY E)

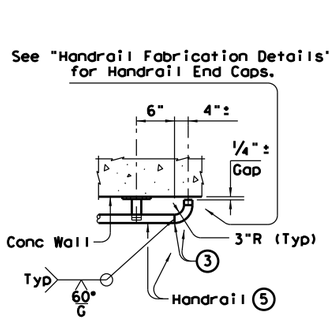
SECTION F-F
(Showing Handrail TY F)



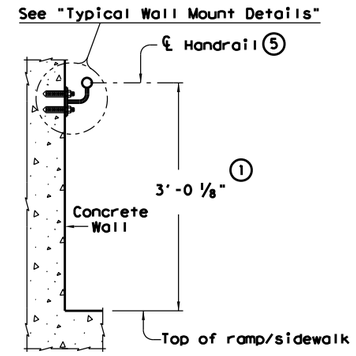
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail TY W)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

Texas Department of Transportation

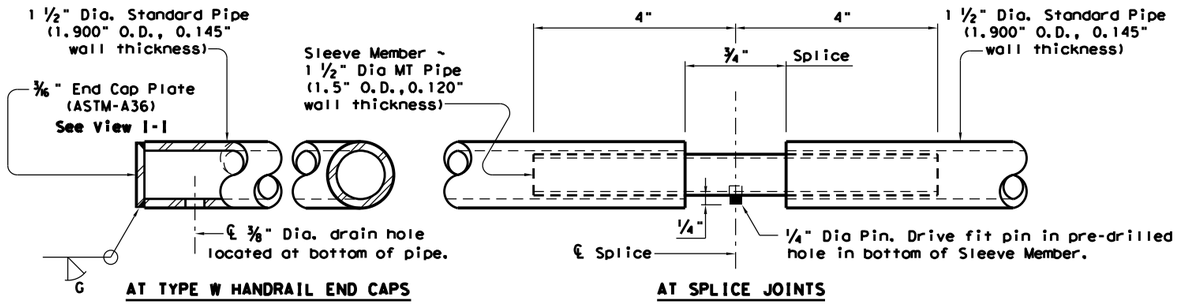
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		107

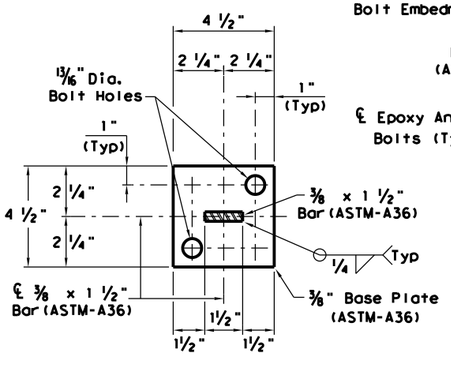
DATE: $DATE$
FILE: $FILE$



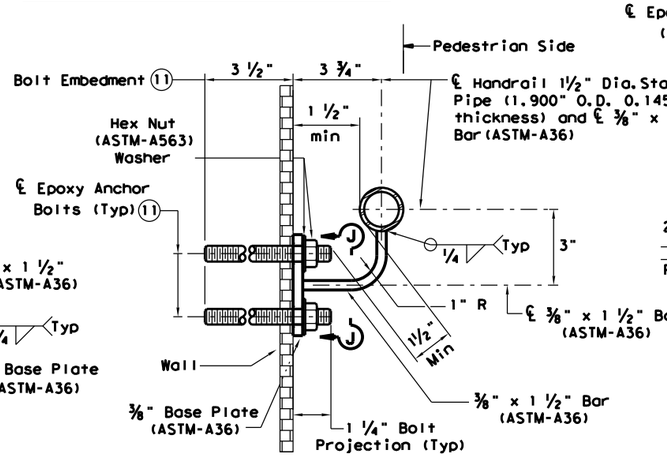
AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS

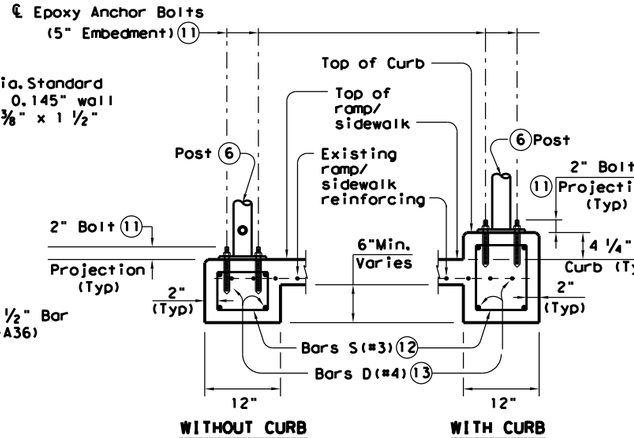


SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT

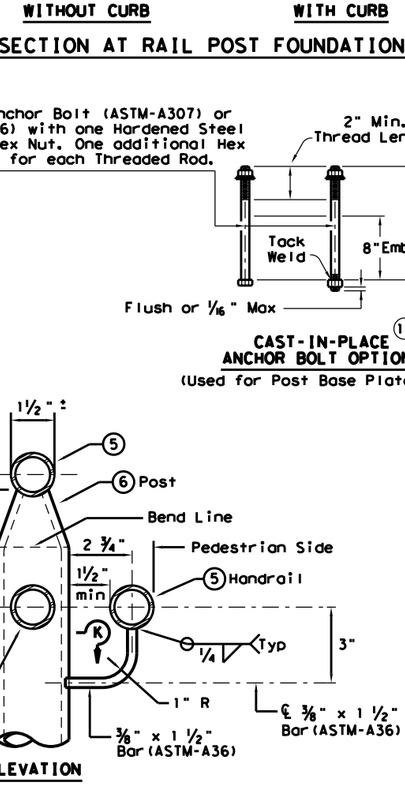
TYPICAL WALL MOUNT DETAILS



WITHOUT CURB

WITH CURB

SECTION AT RAIL POST FOUNDATIONS



RAMP INTERSECTION

MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

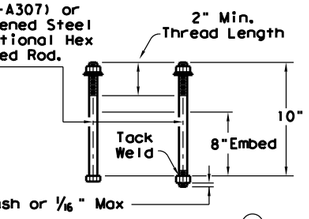
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

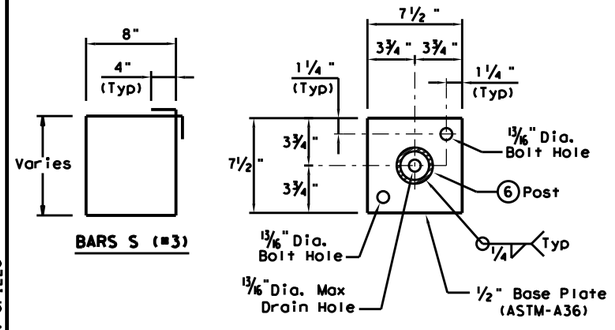
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

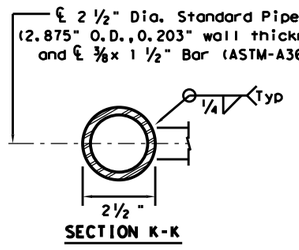
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



CAST-IN-PLACE ANCHOR BOLT OPTIONS
(Used for Post Base Plate only)



TYPICAL POST BASE PLATE DETAIL



SECTION K-K

POST MOUNT DETAILS

ELEVATION

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

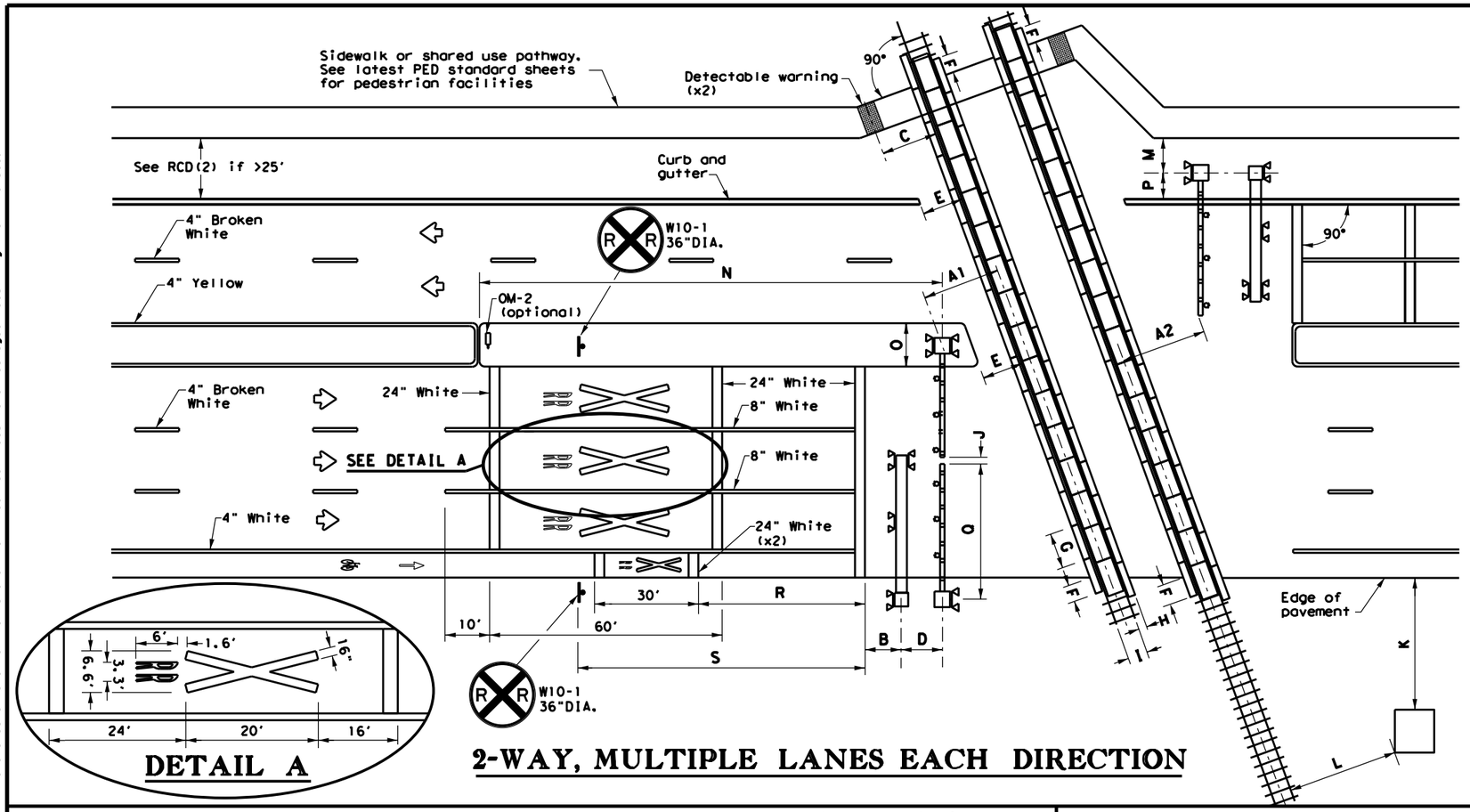
Texas Department of Transportation

Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		108



DETAIL A

2-WAY, MULTIPLE LANES EACH DIRECTION

NOTES

A1: Center of RR mast to center of rail: 12' minimum, 15' typical.

A2: Tip of gate to center of rail: 12' minimum, 15' typical.

B: Center of mast (cantilever, gate, or mast flasher) of nearest active traffic control device to stop line: 8' (NOTE: Stop line may be moved as needed, but should be at least 8' back from gates, if present).

C: Center of detectable warning device to nearest rail: 6' minimum

D: Center of gate mast to center of cantilever mast: 6' typical. NOTE: Cantilever may be located in front or behind gates.

E: Edge of median or curb to nearest rail: 10' typical. NOTE: Design median edge to be parallel with rail.

F: Edge of planking panel from edge of pavement or sidewalk: 3' minimum. NOTE: Field panels need not be in line with gauge panels.

G: Length of panels along rail: 8' typical.

H: Width of field panel: 2' typical (check with railroad company).

I: Distance between rails: 4'-8.5".

J: Tip of gate to tip of gate: 2' maximum for Quiet Zone SSM or 90% of traveled way covered by gates for all other locations.

K: Nearest edge of RR cabin from edge of pavement: 30' typical. NOTE: Cabinet not required to be parallel to edge of pavement.

L: Nearest edge of RR cabin from nearest rail: 25' typical.

M: Center of RR mast to edge of sidewalk: 6' minimum.

N: Center of gate mast to leading edge of non-traversable median: 100' minimum to qualify as a Quiet Zone SSM. NOTE: 60'will suffice if there is a street intersection within the 100' and all street intersections within 60' are closed.

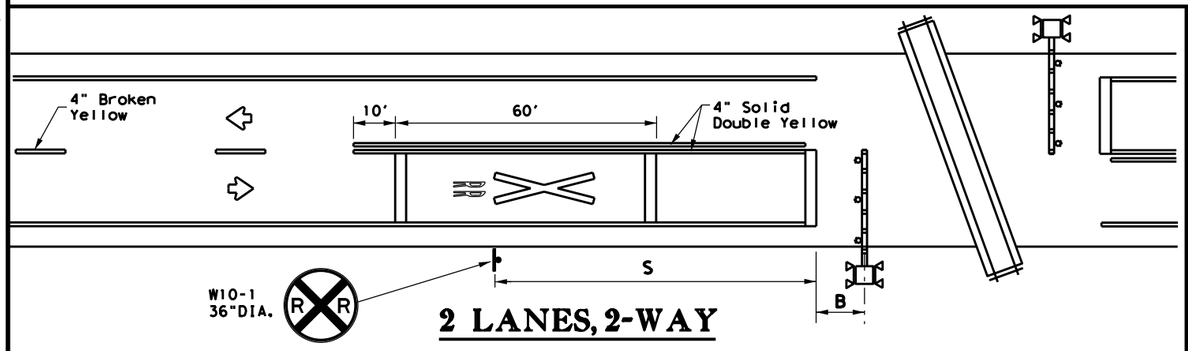
O: Width of median: 8'-6" minimum, 10' typical when using median gates. NOTE: Center of gate mast minimum 4'-3" from face of curb.

P: Center of RR mast to face of curb: 4'-3" minimum. Center of RR mast to edge of pavement (with shoulder): 6' minimum Center of RR mast to edge of pavement (no shoulder): 8'-3" minimum NOTE: BNSF prefers 5'-3", 7', and 9'-3" minimums, respectively.

Q: Gate length: 28' or less typical, but railroad company may allow up to 32'under special circumstances.

R: Stop line to first RR Crossing transverse line (bike lane): 50' typical.

S: Stop line to GRADE CROSSING ADVANCE WARNING (W10-1) sign and adjacent RR Crossing pavement markings. See Table 1. See RCD(2) for other signs.



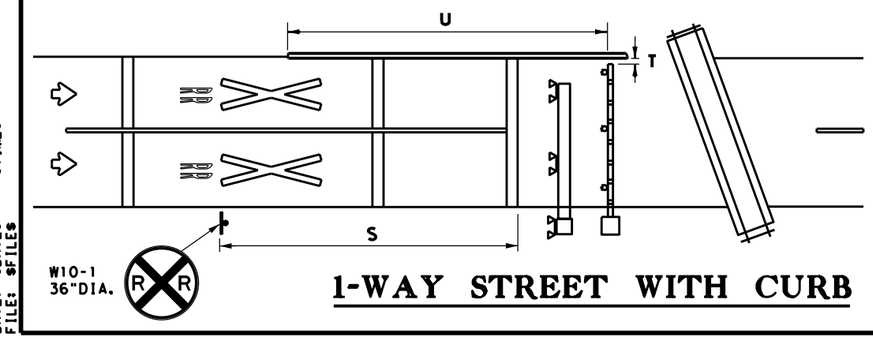
2 LANES, 2-WAY

TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

LEGEND	
	Sign
	Object Marker
	Traffic Flow
	Cantilever
	Gate Assembly
	Mast Flasher Pair

GENERAL NOTES

1. Medians and curbs must be non-traversable to qualify as a Quiet Zone Supplementary Safety Measure (SSM). Non-traversable curbs in Quiet Zones are 6" tall minimum and used on roadways where speed does not exceed 40 mph.
2. Raised pavement markers may be used to supplement striping. See PM(2) and PM(3) standard sheets.
3. Medians preferred whenever possible to prevent vehicles from driving around gates.
4. Longitudinal edge striping may be continued thru crossing as needed. Illumination may also be considered for nighttime visibility.
5. See SMD standard sheets for sign mounting details.
6. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

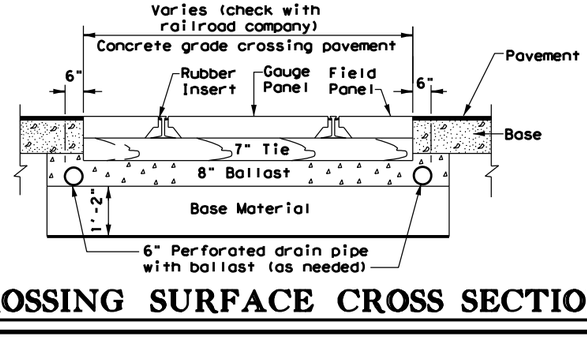


1-WAY STREET WITH CURB

NOTES

T: Tip of gate to edge of curb: 1' max for Quiet Zone SSM, 90% of traveled way covered by gates for all other locations

U: Non-traversable curb length from gate: 100' min. for a Quiet Zone SSM, 10' min for all other locations.



CROSSING SURFACE CROSS SECTION

Texas Department of Transportation

Traffic Operations Division Standard

RAILROAD CROSSING DETAILS SIGNING, STRIPING, AND DEVICE PLACEMENT RCD(1)-16

FILE: rcd1-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		109

DATE: $DATE$
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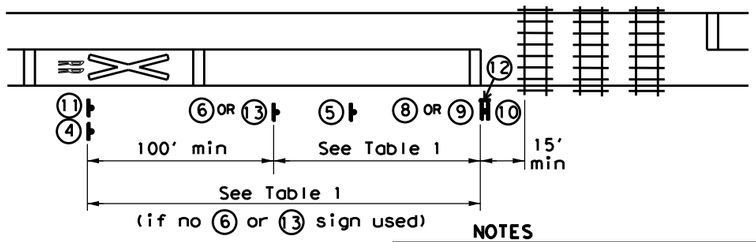
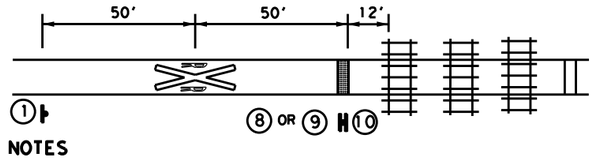


PASSIVE CROSSING

NOTES

1. Stop or yield sign may also be installed to the left of the crossbuck sign, rather than below it.
2. A 2" white retroreflective strip shall be installed on front and back of crossbuck sign post.



NOTES

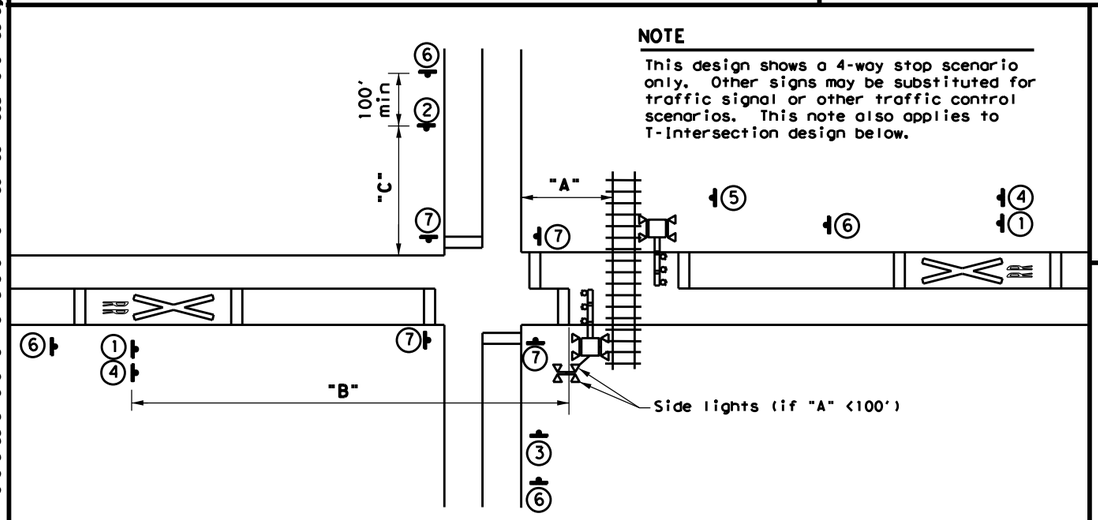
1. A shared use pathway is considered a separate pathway crossing when more than 25' from traveled way of adjacent roadway.
2. Detectable warning used at stop bar.
3. Smaller sign sizes preferred than shown to the right on this sheet.

PATHWAY CROSSING

TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

GENERAL NOTES

1. Railroad company to provide active traffic control devices, CROSSBUCK (R15-1), NUMBER OF TRACKS Plaque (R15-2P) (if more than 1 track), and EMERGENCY NOTIFICATION (I-13) signs.
2. LOW GROUND CLEARANCE (W10-5) signs may be relocated further upstream of crossing to provide advance warning of alternate route.
3. GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2) signs may be modified as needed to fit roadway geometry.
4. Table 1 placement distances may vary per Sect. 2C.05 of the TMUTCD.
5. See Table 1 to determine placement of STOP AHEAD (W3-1) and YIELD AHEAD (W3-2) signs unless shown otherwise.
6. DO NOT STOP ON TRACKS (R8-8) signs installed when potential for vehicles stopping on tracks is significant as determined by sealing engineer. Install so sign does not block view of RR mast.
7. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

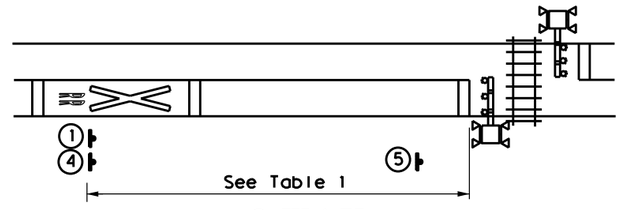


NOTE

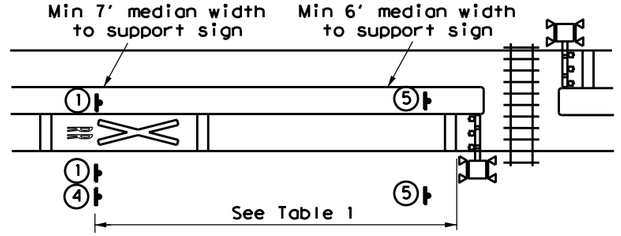
This design shows a 4-way stop scenario only. Other signs may be substituted for traffic signal or other traffic control scenarios. This note also applies to T-Intersection design below.

	"A" <100'	"A" ≥100'
"B"	See Table 1. Place pavement markings and signs on opposite side of intersection from rail if spacing from Table 1 would put markings within intersection.	See Table 1. Place pavement markings and signs between rail and intersection if spacing from Table 1 would put markings within intersection.
"C"	See Table 1.	GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2, W10-3, W10-4) signs should only be installed if W10-1 sign is not between intersection and railroad crossing. If needed, see Table 1.

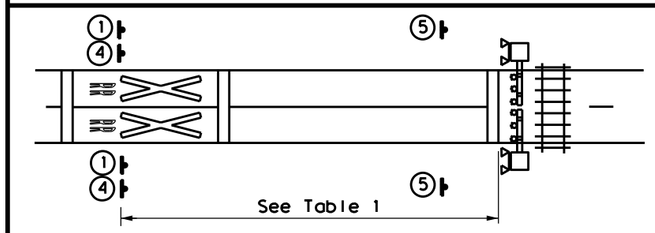
GRADE CROSSING NEAR A PARALLEL STREET



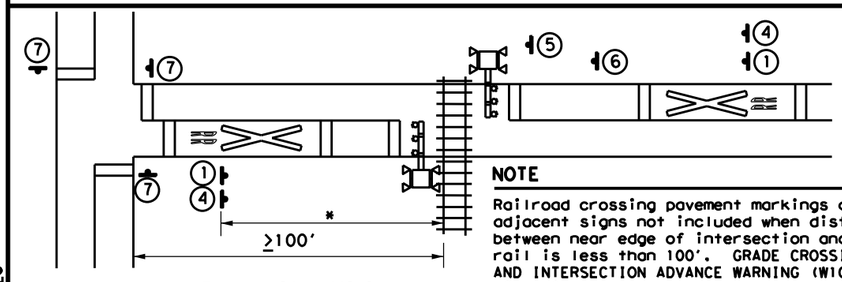
2-WAY



2-WAY WITH MEDIAN



1-WAY

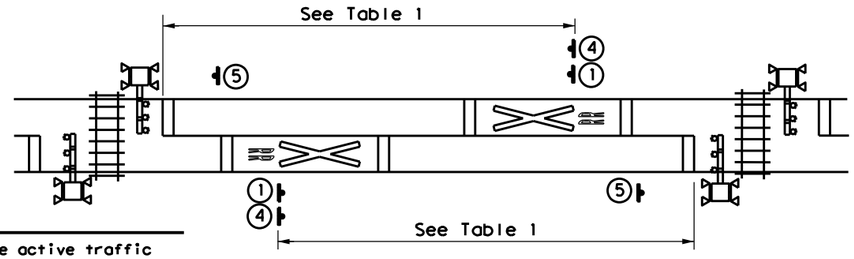


*Use Table 1 if sufficient space exists.

NOTE

Railroad crossing pavement markings and adjacent signs not included when distance between near edge of intersection and near rail is less than 100'. GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-3) signs installed on roadway parallel with rail in this case.

T-INTERSECTION



NOTE

Separate active traffic control devices, railroad crossing pavement markings, and adjacent signs required when tracks are more than 100' apart.

2 ADJACENT CROSSINGS

SIGNS

** ① W10-1 36"DIA.	** ② W10-2L 36"X36"	** ③ W10-2R 36"X36"	IF NEEDED ④ W10-5 36"X36" / LOW GROUND CLEARANCE W10-5P 30"x24"	
IF NEEDED ⑤ R8-8 24"X30"	IF NEEDED ⑥ W3-1 30"X30"	⑦ STOP R1-1 36"X36" / ALL WAY R1-3P 18"X6"	RAIL CROSSING ROAD 3 TRACKS R15-1 48"X9" / R15-2P 27"X18" / STOP R1-1 36"X36" ⑧	
RAIL CROSSING ROAD 3 TRACKS R15-1 48"X9" / R15-2P 27"X18" / YIELD ⑨ R1-2 48"X48"X48"	RAIL CROSSING ROAD 3 TRACKS R15-1 48"X9" / R15-2P 27"X18" ⑩	R R W10-1 36"DIA. / NO GATES OR LIGHTS W10-13P 30"X24" ⑪ **	REPORT EMERGENCY OR PROBLEM 1-800-555-5555 CROSSING 836 597 H Sign may be placed perpend. to travel lanes. ⑫ I-13 15"X9"	
IF NEEDED ⑬ W3-2 30"X30"	** Includes a NO TRAIN HORN Plaque (W10-9P) if crossing is in a Quiet Zone. LOW GROUND CLEARANCE Plaque (W10-5P) if needed is mounted below W10-2/W10-3/W10-4 signs.			
NO TRAIN HORN W10-9P 30"X24"	LOW GROUND CLEARANCE W10-5P 30"X24"			

Texas Department of Transportation — Traffic Operations Division Standard

RAILROAD CROSSING DETAILS SIGNING & STRIPING

RCD(2)-16

FILE: rcd2-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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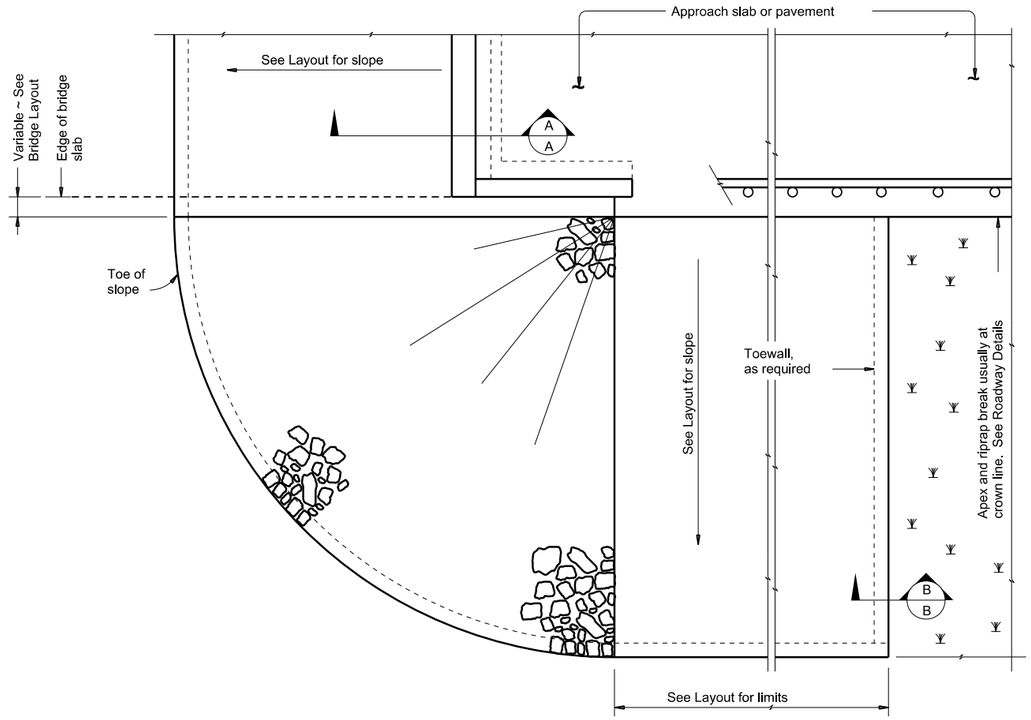
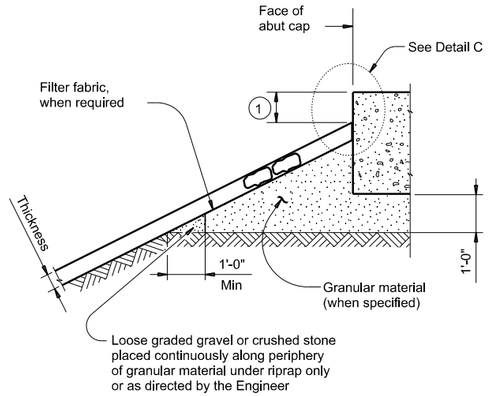
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		110

DATE: $DATE$ $TIME$
FILE: $FILE$

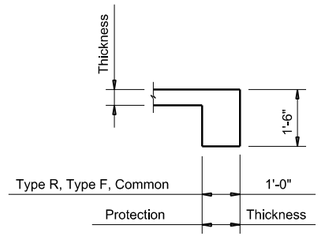
DATE: $DATE$ $TIME$
FILE: $FILE$



PLAN

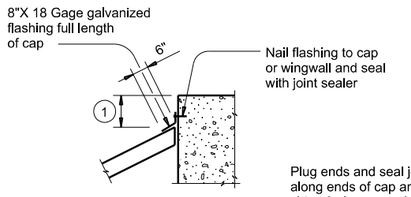


SECTION A-A AT CAP

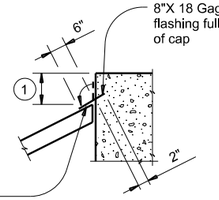


SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".

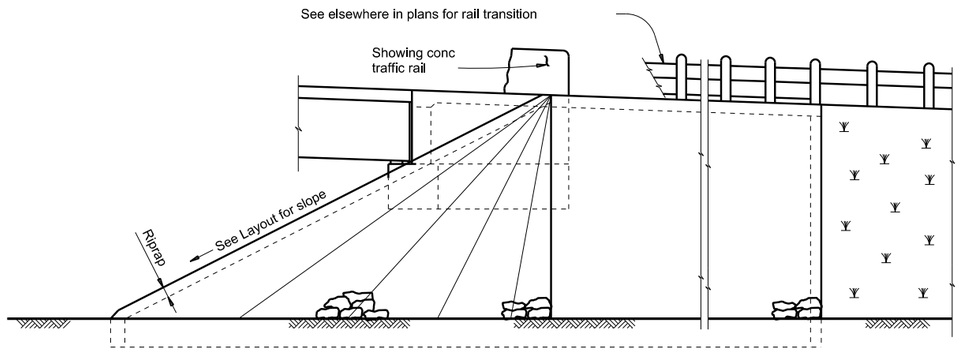


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
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REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		111

DATE: $DATE$ $TIME$
FILE: $FILE$

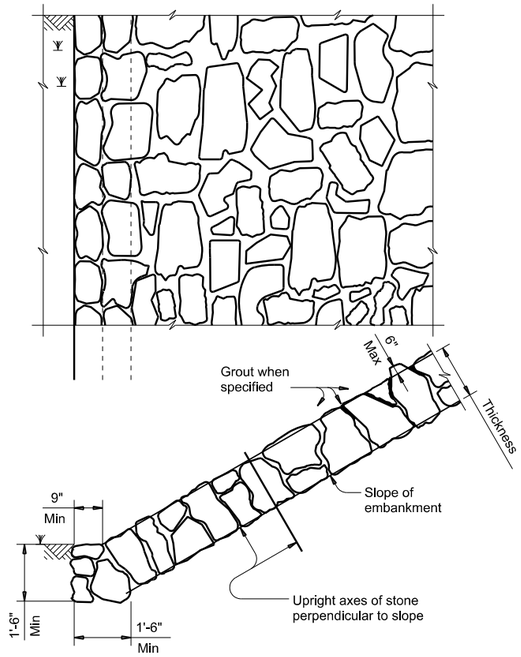


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

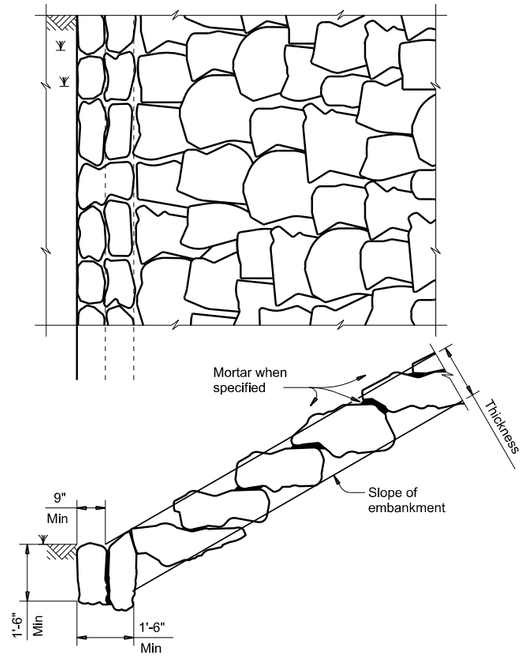


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

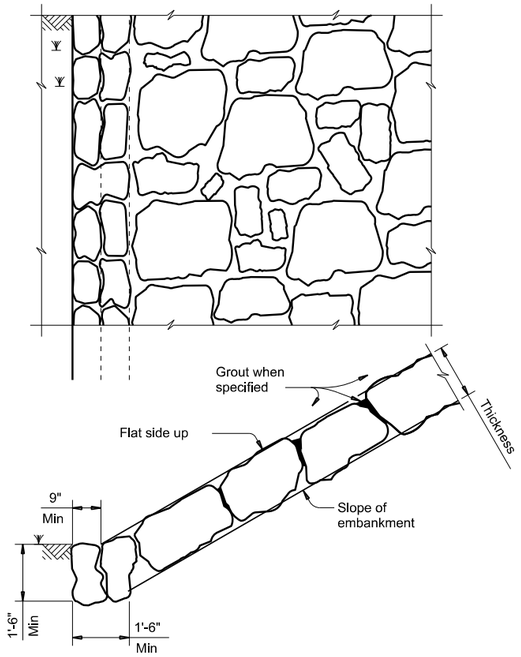


FIGURE 3 ~ TYPE F STONE RIPRAP

grouted

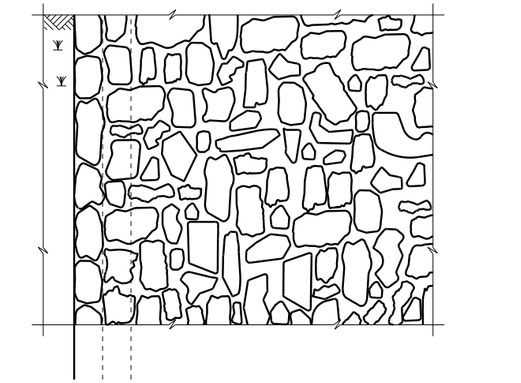


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

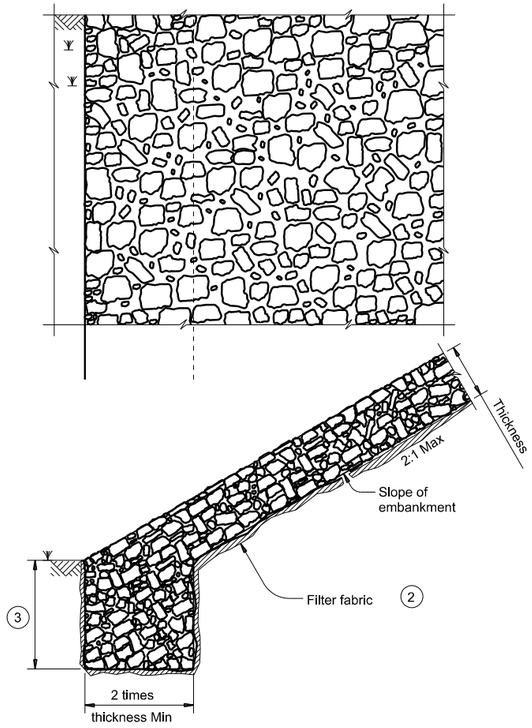


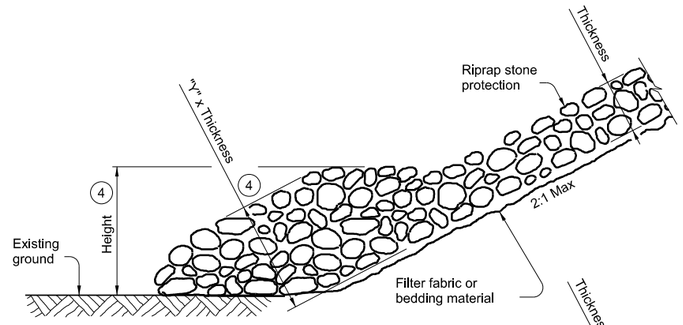
FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

(2) Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.

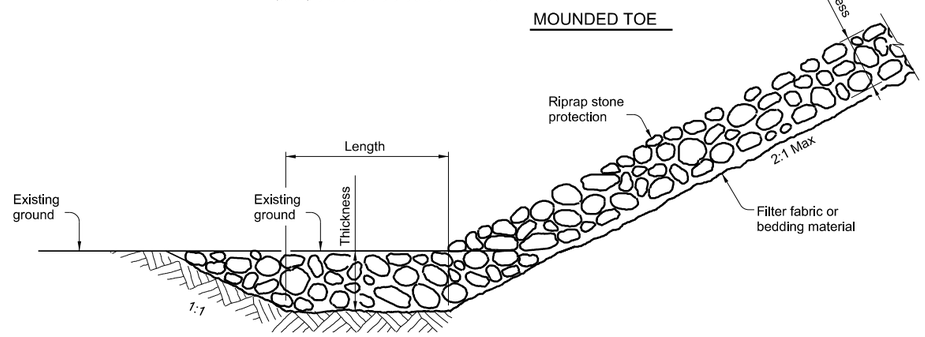
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

(4) "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.

(5) List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

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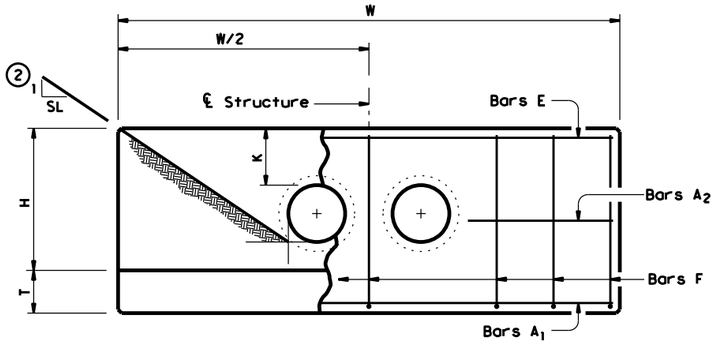
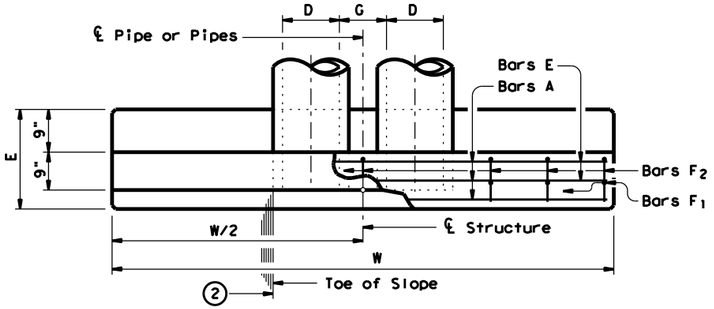
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		112

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

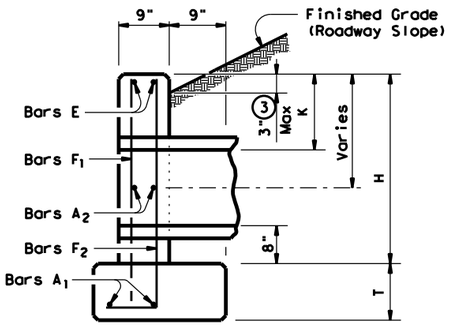
SLOPE	DIA OF PIPE, D	Values for one Pipe			Values to be added for each addt'l Pipe		
		W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	9'- 0"	122	1.1	1'- 9"	15	0.2
	15"	10'- 3"	136	1.3	2'- 2"	16	0.2
	18"	11'- 6"	163	1.5	2'- 8"	19	0.3
	21"	12'- 9"	200	1.8	3'- 1"	31	0.4
	24"	14'- 0"	217	2.1	3'- 7"	34	0.4
	27"	15'- 3"	254	2.4	3'-11"	37	0.5
	30"	16'- 6"	272	2.7	4'- 4"	40	0.6
	33"	17'- 9"	314	3.1	4'- 8"	43	0.6
	36"	19'- 0"	371	3.9	5'- 1"	46	0.8
	42"	21'- 6"	442	4.9	5'-10"	52	1.0
	48"	25'- 0"	569	6.4	6'- 7"	59	1.3
	54"	27'- 6"	701	7.5	7'- 6"	82	1.6
	60"	30'- 0"	794	8.8	8'- 3"	90	1.8
	66"	32'- 6"	894	10.2	8'- 9"	96	2.0
	72"	35'- 0"	1055	11.7	9'- 4"	103	2.3
3:1	12"	13'- 0"	175	1.6	1'- 9"	14	0.2
	15"	14'- 9"	193	1.9	2'- 2"	17	0.2
	18"	16'- 6"	228	2.2	2'- 8"	19	0.3
	21"	18'- 3"	299	2.6	3'- 1"	31	0.4
	24"	20'- 0"	323	3.0	3'- 7"	33	0.4
	27"	21'- 9"	371	3.5	3'-11"	37	0.5
	30"	23'- 6"	415	4.0	4'- 4"	40	0.5
	33"	25'- 3"	469	4.6	4'- 8"	43	0.6
	36"	27'- 0"	556	5.7	5'- 1"	46	0.8
	42"	30'- 6"	675	7.1	5'-10"	52	1.0
	48"	35'- 6"	837	9.2	6'- 7"	59	1.3
	54"	39'- 0"	1015	11.0	7'- 6"	84	1.6
	60"	42'- 6"	1171	12.9	8'- 3"	91	1.8
	66"	46'- 0"	1298	14.9	8'- 9"	98	2.0
	72"	49'- 6"	1561	17.1	9'- 4"	103	2.3
4:1	12"	17'- 0"	229	2.0	1'- 9"	15	0.2
	15"	19'- 3"	266	2.4	2'- 2"	17	0.2
	18"	21'- 6"	308	2.9	2'- 8"	19	0.3
	21"	23'- 9"	382	3.5	3'- 1"	31	0.3
	24"	26'- 0"	430	3.9	3'- 7"	34	0.4
	27"	28'- 3"	486	4.7	3'-11"	37	0.5
	30"	30'- 6"	539	5.2	4'- 4"	40	0.6
	33"	32'- 9"	603	6.0	4'- 8"	42	0.6
	36"	35'- 0"	738	7.5	5'- 1"	47	0.8
	42"	39'- 6"	881	9.3	5'-10"	52	1.0
	48"	46'- 0"	1102	12.1	6'- 7"	61	1.3
	54"	50'- 6"	1364	14.4	7'- 6"	84	1.6
	60"	55'- 0"	1547	16.9	8'- 3"	91	1.8
	66"	59'- 6"	1741	19.5	8'- 9"	98	2.0
	72"	64'- 0"	2069	22.4	9'- 4"	102	2.3
6:1	12"	25'- 0"	336	3.0	1'- 9"	14	0.2
	15"	28'- 3"	384	3.6	2'- 2"	17	0.2
	18"	31'- 6"	452	4.2	2'- 8"	19	0.3
	21"	34'- 9"	581	5.1	3'- 1"	31	0.4
	24"	38'- 0"	644	5.8	3'- 7"	34	0.4
	27"	41'- 3"	737	6.9	3'-11"	37	0.5
	30"	44'- 6"	807	7.7	4'- 4"	39	0.6
	33"	47'- 9"	912	8.9	4'- 8"	44	0.6
	36"	51'- 0"	1108	11.0	5'- 1"	48	0.8
	42"	57'- 6"	1318	13.7	5'-10"	54	1.0
	48"	67'- 0"	1674	17.9	6'- 7"	59	1.3
	54"	73'- 6"	2064	21.3	7'- 6"	83	1.6
	60"	80'- 0"	2343	24.9	8'- 3"	89	1.8
	66"	86'- 6"	2635	28.9	8'- 9"	96	2.0
	72"	93'- 0"	3123	33.1	9'- 4"	101	2.3



ELEVATION



PLAN OF NON-SKEWED PIPES



℄ SECTION

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) Indicated slope is perpendicular to centerline Pipe or Pipes.

(3) For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

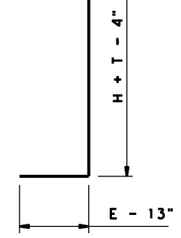
(4) Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H	T	E
12"	9"	1'- 0"	2'- 8"	9"	1'- 9"
15"	11"	1'- 0"	2'-11"	9"	1'- 9"
18"	1'- 2"	1'- 0"	3'- 2"	9"	1'- 9"
21"	1'- 4"	1'- 0"	3'- 5"	9"	2'- 0"
24"	1'- 7"	1'- 0"	3'- 8"	9"	2'- 0"
27"	1'- 8"	1'- 0"	3'-11"	9"	2'- 3"
30"	1'-10"	1'- 0"	4'- 2"	9"	2'- 3"
33"	1'-11"	1'- 0"	4'- 5"	9"	2'- 6"
36"	2'- 1"	1'- 0"	4'- 8"	1'- 0"	2'- 6"
42"	2'- 4"	1'- 0"	5'- 2"	1'- 0"	2'- 9"
48"	2'- 7"	1'- 3"	5'-11"	1'- 0"	3'- 0"
54"	3'- 0"	1'- 3"	6'- 5"	1'- 0"	3'- 3"
60"	3'- 3"	1'- 3"	6'-11"	1'- 0"	3'- 6"
66"	3'- 3"	1'- 3"	7'- 5"	1'- 0"	3'- 9"
72"	3'- 4"	1'- 3"	7'-11"	1'- 0"	4'- 0"

TABLE OF REINFORCING STEEL (4)

Bar	Size	Spa	No.
A1	# 5	~	2
A2	# 5	1'-6"	~
E	# 5	~	2
F	# 5	1'-0"	~



BARS F2

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS
WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: chpw0ste.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
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REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
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DATE: $DATE$ $TIME$
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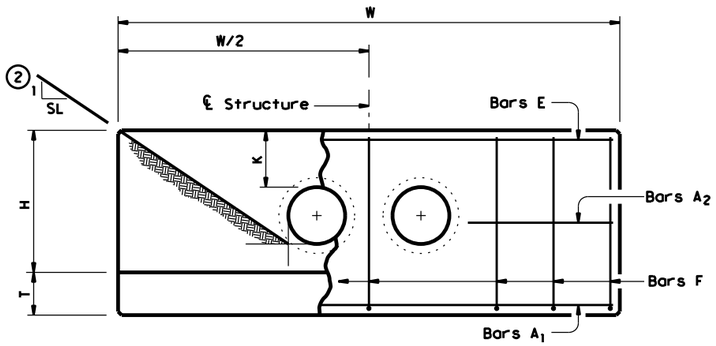
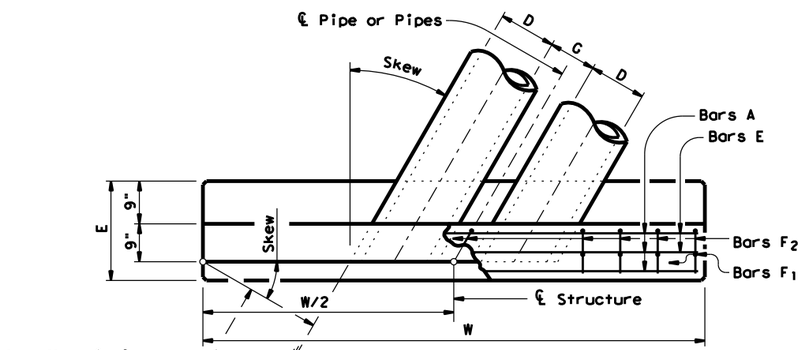
DATE: $DATE$
FILE: $FILE$
$TIME$

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

SLOPE	DIA OF PIPE, D	15 Degrees						30 Degrees						45 Degrees					
		Values for one Pipe			Values to be added for each addt'l Pipe			Values for one Pipe			Values to be added for each addt'l Pipe			Values for one Pipe			Values to be added for each addt'l Pipe		
		W	Reinf (LBS)	Conc (CY) (1)	W	Reinf (LBS)	Conc (CY) (1)	W	Reinf (LBS)	Conc (CY) (1)	W	Reinf (LBS)	Conc (CY) (1)	W	Reinf (LBS)	Conc (CY) (1)	W	Reinf (LBS)	Conc (CY) (1)
2:1	12"	9'- 4"	124	1.1	1'- 9 3/4"	15	0.2	10'- 5"	130	1.2	2'- 0"	16	0.2	12'- 9"	159	1.5	2'- 5 3/4"	17	0.3
	15"	10'- 7"	136	1.3	2'- 3"	17	0.2	11'-10"	159	1.5	2'- 6"	18	0.2	14'- 6"	191	1.8	3'- 0 3/4"	20	0.3
	18"	11'-11"	165	1.5	2'- 9"	19	0.3	13'- 3"	174	1.7	3'- 1"	29	0.3	16'- 3"	207	2.1	3'- 9 1/4"	33	0.4
	21"	13'- 2"	203	1.9	3'- 2 1/4"	31	0.4	14'- 9"	233	2.1	3'- 6 3/4"	33	0.4	18'- 0"	276	2.6	4'- 4 1/4"	36	0.5
	24"	14'- 6"	240	2.1	3'- 8 1/4"	34	0.4	16'- 2"	251	2.4	4'- 1 3/4"	36	0.5	19'-10"	318	2.9	5'- 0 3/4"	39	0.6
	27"	15'- 9"	258	2.5	4'- 0 3/4"	38	0.5	17'- 7"	292	2.8	4'- 6 1/4"	39	0.6	21'- 7"	342	3.4	5'- 6 1/4"	44	0.7
	30"	17'- 1"	297	2.8	4'- 5 3/4"	40	0.6	19'- 1"	311	3.1	5'- 0"	42	0.6	23'- 4"	388	3.8	6'- 1 3/4"	47	0.8
	33"	18'- 5"	320	3.3	4'- 9 3/4"	43	0.6	20'- 6"	358	3.6	5'- 4 3/4"	46	0.7	25'- 1"	439	4.4	6'- 7 1/4"	51	0.9
	36"	19'- 8"	401	4.0	5'- 3"	47	0.9	21'-11"	422	4.5	5'-10 3/4"	50	0.9	26'-10"	517	5.5	7'- 2 1/4"	55	1.2
	42"	22'- 3"	476	5.0	6'- 0 3/4"	53	1.1	24'-10"	528	5.6	6'- 8 3/4"	56	1.2	30'- 5"	634	6.9	8'- 3"	76	1.4
	48"	25'-11"	577	6.6	6'- 9 3/4"	60	1.3	28'-10"	637	7.3	7'- 7 1/4"	79	1.5	35'- 4"	791	9.0	9'- 3 3/4"	88	1.8
	54"	28'- 6"	711	7.8	7'- 9"	83	1.6	31'- 9"	781	8.7	8'- 8"	87	1.8	38'-11"	958	10.7	10'- 7 1/4"	97	2.2
	60"	31'- 1"	805	9.2	8'- 6 1/4"	91	1.9	34'- 8"	881	10.2	9'- 6 1/4"	97	2.1	42'- 5"	1113	12.5	11'- 8"	124	2.6
	66"	33'- 8"	907	10.6	9'- 0 3/4"	98	2.1	37'- 6"	1028	11.8	10'- 1 1/4"	102	2.4	46'- 0"	1235	14.5	12'- 4 1/4"	132	2.9
	72"	36'- 3"	1071	12.1	9'- 8"	105	2.4	40'- 5"	1207	13.5	10'- 9 1/4"	110	2.6	49'- 6"	1446	16.6	13'- 2 1/4"	141	3.2
3:1	12"	13'- 6"	178	1.6	1'- 9 3/4"	15	0.2	15'- 0"	189	1.8	2'- 0"	15	0.2	18'- 5"	237	2.2	2'- 5 3/4"	17	0.2
	15"	15'- 3"	212	1.9	2'- 3"	17	0.2	17'- 0"	223	2.1	2'- 6"	17	0.3	20'-10"	276	2.6	3'- 0 3/4"	20	0.3
	18"	17'- 1"	231	2.3	2'- 9"	19	0.3	19'- 1"	259	2.5	3'- 1"	29	0.3	23'- 4"	318	3.1	3'- 9 1/4"	32	0.4
	21"	18'-11"	306	2.7	3'- 2 1/4"	31	0.4	21'- 1"	339	3.0	3'- 6 3/4"	33	0.4	25'-10"	413	3.7	4'- 4 1/4"	36	0.5
	24"	20'- 8"	345	3.1	3'- 8 3/4"	35	0.4	23'- 1"	384	3.5	4'- 1 3/4"	36	0.5	28'- 3"	462	4.2	5'- 0 3/4"	40	0.6
	27"	22'- 6"	376	3.7	4'- 0 3/4"	38	0.5	25'- 1"	438	4.1	4'- 6 1/4"	39	0.6	30'- 9"	522	5.0	5'- 6 1/4"	44	0.7
	30"	24'- 4"	422	4.1	4'- 5 3/4"	40	0.6	27'- 2"	466	4.6	5'- 0"	42	0.6	33'- 3"	578	5.6	6'- 1 3/4"	47	0.8
	33"	26'- 2"	476	4.8	4'-10"	43	0.6	29'- 2"	522	5.3	5'- 4 3/4"	46	0.7	35'- 9"	644	6.5	6'- 7 1/4"	51	0.9
	36"	27'-11"	590	5.9	5'- 3 1/4"	47	0.8	31'- 2"	645	6.6	5'-10 3/4"	50	0.9	38'- 2"	787	8.0	7'- 2 1/4"	56	1.2
	42"	31'- 7"	684	7.3	6'- 0 1/4"	53	1.1	35'- 3"	776	8.2	6'- 8 3/4"	56	1.2	43'- 2"	933	10.0	8'- 3"	79	1.4
	48"	36'- 9"	880	9.6	6'- 9 3/4"	61	1.3	41'- 0"	953	10.7	7'- 7 1/4"	81	1.5	50'- 2"	1166	13.1	9'- 3 3/4"	88	1.8
	54"	40'- 5"	1065	11.4	7'- 9"	85	1.6	45'- 0"	1185	12.7	8'- 8"	89	1.8	55'- 2"	1435	15.5	10'- 7 1/4"	97	2.2
	60"	44'- 0"	1224	13.3	8'- 6 1/4"	93	1.9	49'- 1"	1356	14.8	9'- 6 1/4"	96	2.1	60'- 1"	1627	18.2	11'- 8"	124	2.6
	66"	47'- 7"	1357	15.4	9'- 1"	98	2.1	53'- 1"	1497	17.2	10'- 1 1/4"	103	2.3	65'- 1"	1834	21.1	12'- 4 1/4"	130	2.9
	72"	51'- 3"	1624	17.7	9'- 8"	105	2.3	57'- 2"	1787	19.7	10'- 9 1/4"	109	2.6	70'- 0"	2210	24.1	13'- 2 1/4"	139	3.2
4:1	12"	17'- 7"	232	2.1	1'- 9 3/4"	15	0.2	19'- 8"	259	2.4	2'- 0"	16	0.2	24'- 0"	314	2.9	2'- 5 3/4"	18	0.2
	15"	19'-11"	272	2.5	2'- 3"	17	0.2	22'- 3"	301	2.8	2'- 6"	18	0.3	27'- 3"	361	3.5	3'- 0 3/4"	21	0.3
	18"	22'- 3"	313	3.0	2'- 9"	19	0.3	24'-10"	344	3.3	3'- 1"	29	0.3	30'- 5"	427	4.0	3'- 9 1/4"	32	0.4
	21"	24'- 7"	407	3.6	3'- 2 1/4"	31	0.4	27'- 5"	446	4.0	3'- 6 3/4"	33	0.4	33'- 7"	549	4.9	4'- 4 1/4"	36	0.5
	24"	26'-11"	455	4.1	3'- 8 3/4"	35	0.4	30'- 0"	499	4.5	4'- 1 3/4"	36	0.5	36'- 9"	609	5.6	5'- 0 3/4"	40	0.6
	27"	29'- 3"	514	4.8	4'- 0 3/4"	38	0.5	32'- 7"	562	5.4	4'- 6 1/4"	40	0.6	39'-11"	703	6.6	5'- 6 1/4"	43	0.7
	30"	31'- 7"	568	5.4	4'- 5 3/4"	40	0.6	35'- 3"	620	6.0	5'- 0"	42	0.6	43'- 2"	768	7.4	6'- 1 3/4"	49	0.8
	33"	33'-11"	634	6.2	4'-10"	43	0.7	37'-10"	710	7.0	5'- 4 3/4"	46	0.7	46'- 4"	848	8.5	6'- 7 1/4"	52	0.9
	36"	36'- 3"	776	7.7	5'- 3"	48	0.9	40'- 5"	868	8.6	5'-10 3/4"	49	0.9	49'- 6"	1058	10.6	7'- 2 1/4"	56	1.1
	42"	40'-11"	921	9.6	6'- 0 1/4"	53	1.0	45'- 7"	1022	10.7	6'- 8 3/4"	57	1.2	55'-10"	1262	13.1	8'- 3"	78	1.4
	48"	47'- 7"	1152	12.6	6'-10"	61	1.3	53'- 1"	1268	14.0	7'- 7 1/4"	80	1.5	65'- 1"	1579	17.2	9'- 3 3/4"	86	1.8
	54"	52'- 3"	1416	14.9	7'- 9 1/4"	86	1.6	58'- 4"	1589	16.6	8'- 8"	89	1.8	71'- 5"	1916	20.4	10'- 7 1/4"	95	2.2
	60"	56'-11"	1606	17.5	8'- 6 3/4"	92	1.9	63'- 6"	1798	19.5	9'- 6 1/4"	95	2.1	77'- 9"	2184	23.9	11'- 8"	122	2.6
	66"	61'- 7"	1811	20.2	9'- 0 3/4"	97	2.1	68'- 8"	2011	22.5	10'- 1 1/4"	101	2.4	84'- 2"	2464	27.6	12'- 4 1/4"	131	2.9
	72"	66'- 3"	2142	23.2	9'- 8"	104	2.4	73'-11"	2371	25.9	10'- 9 1/4"	108	2.6	90'- 6"	2929	31.7	13'- 2 1/4"	138	3.2
6:1	12"	25'-11"	342	3.1	1'- 9 3/4"	15	0.2	28'-10"	374	3.5	2'- 0"	16	0.2	35'- 4"	456	4.3	2'- 5 3/4"	17	0.2
	15"	29'- 3"	390	3.7	2'- 3"	17	0.2	32'- 7"	442	4.2	2'- 6"	18	0.2	39'-11"	549	5.1	3'- 0 3/4"	20	0.3
	18"	32'- 7"	459	4.4	2'- 9"	20	0.3	36'- 4"	515	4.9	3'- 1"	29	0.3	44'- 7"	629	6.0	3'- 9 1/4"	33	0.4
	21"	36'- 0"	608	5.3	3'- 2 1/4"	31	0.4	40'- 2"	660	5.9	3'- 6 3/4"	33	0.4	49'- 2"	823	7.2	4'- 4 1/4"	38	0.5
	24"	39'- 4"	672	6.0	3'- 8 3/4"	35	0.4	43'-11"	748	6.7	4'- 1 3/4"	36	0.5	53'- 9"	920	8.2	5'- 0 3/4"	42	0.6
	27"	42'- 8"	770	7.1	4'- 0 3/4"	38	0.5	47'- 8"	852	8.0	4'- 6 1/4"	41	0.5	58'- 4"	1039	9.7	5'- 6 1/4"	45	0.7
	30"	46'- 1"	839	8.0	4'- 5 3/4"	40	0.6	51'- 5"	949	8.9	5'- 0"	44	0.6	62'-11"	1154	10.9	6'- 1 3/4"	48	0.8
	33"	49'- 5"	947	9.2	4'-10"	45	0.7	55'- 2"	1040	10.3	5'- 4 3/4"	48	0.7	67'- 6"	1284	12.6	6'- 7 1/4"	50	0.9
	36"	52'-10"	1151	11.4	5'- 3"	49	0.8	58'-11"	1287	12.7	5'-10 3/4"	51	1.0	72'- 1"	1575	15.6	7'- 2 1/4"	55	1.1
	42"	59'- 6"	1365	14.2	6'- 0 1/4"	55	1.0	66'- 5"	1522	15.8	6'- 8 3/4"	57	1.2	81'- 4"	1867	19.4	8'- 3"	76	1.4
	48"	69'- 4"	1729	18.5	6'-10"	59	1.3	77'- 4"	1934	20.7	7'- 7 1/4"	79	1.5	94'- 9"	2360	25.3	9'- 3 3/4"	86	1.8
	54"	76'- 1"	2130	22.0	7'- 9 1/4"	83	1.6	84'-10"	2370	24.6	8'- 8"	87	1.8	103'-11"	2904	30.1	10'- 7 1/4"	95	2.2
	60"	82'-10"	2414	25.8	8'- 6 3/4"	90	1.9	92'- 5"	2673	28.8	9'- 6 1/4"	94	2.1	113'-2"	3286	35.3	11'- 8"	122	2.6
	66"	89'- 7"	2712	29.9	9'- 0 3/4"	96	2.1	99'-11"	3030	33.3	10'- 1 1/4"	101	2.4	122'-4"	3689	40.8	12'- 4 1/4"	130	2.9
	72"	96'- 3"	3210	34.2	9'- 8"	102	2.4	107'-5"	3572	38.2	10'- 9 1/4"	108	2.6	131'-6"	4364	46.8	13'- 2 1/4"	139	3.2



ELEVATION

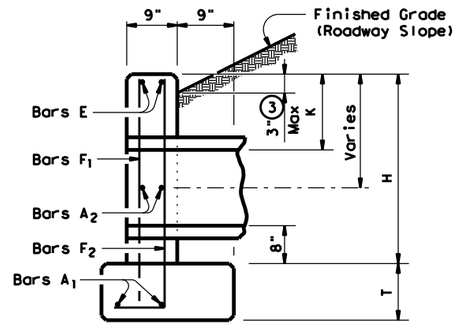


PLAN OF SKEWED PIPES

Showing 30° Skew

Lengths of wings based on SL:1 Slope along this line.

(2) Toe of Slope



℄ SECTION

BARS F2

TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H	T	E
12"	9"	1'- 0"	2'- 8"	9"	1'- 9"
15"	11"	1'- 0"	2'-11"	9"	1'- 9"
18"	1'- 2"	1'- 0"	3'- 2"	9"	1'- 9"
21"	1'- 4"	1'- 0"	3'- 5"	9"	2'- 0"
24"	1'- 7"	1'- 0"	3'- 8"	9"	2'- 0"
27"	1'- 8"	1'- 0"	3'-11"	9"	2'- 3"
30"	1'-10"	1'- 0"	4'- 2"	9"	2'- 3"
33"	1'-11"	1'- 0"	4'- 5"	9"	2'- 6"
36"	2'- 1"	1'- 0"	4'- 8"	1'- 0"	2'- 6"
42"	2'- 4"	1'- 0"	5'- 2"	1'- 0"	2'- 9"
48"	2'- 7"	1'- 3"	5'-11"	1'- 0"	3'- 0"
54"	3'- 0"	1'- 3"	6'- 5"	1'- 0"	3'- 3"
60"	3'- 3"	1'- 3"	6'-11"	1'- 0"	3'- 6"
66"	3'- 3"	1'- 3"	7'- 5"	1'- 0"	3'- 9"
72"	3'- 4"	1'- 3"	7'-11"	1'- 0"	4'- 0"

TABLE OF REINFORCING STEEL (4)

Bar	Size	Spa	No.
A1	# 5	~	2
A2	# 5	1'-6"	~
E	# 5	~	2
F	# 5	1'-0"	~

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) Indicated slope is perpendicular to centerline Pipe or Pipes.

(3) For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(4) Quantities shown are for one structure end only (one headwall).

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR SKEWED PIPE CULVERTS

CH-PW-S

FILE: chpwsste.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		114

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

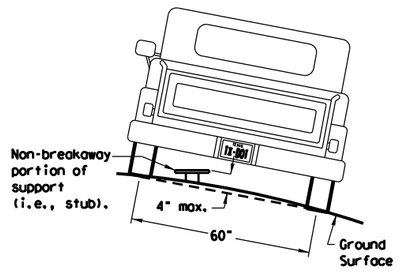
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

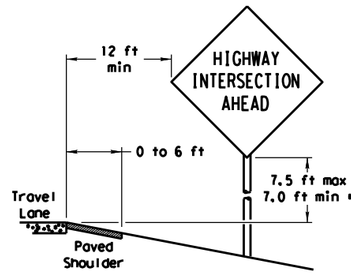
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

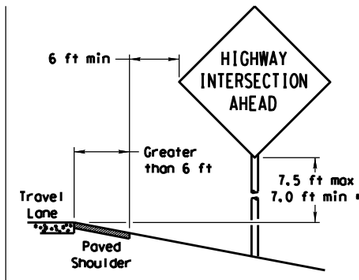
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

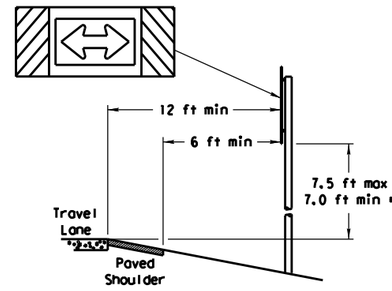
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



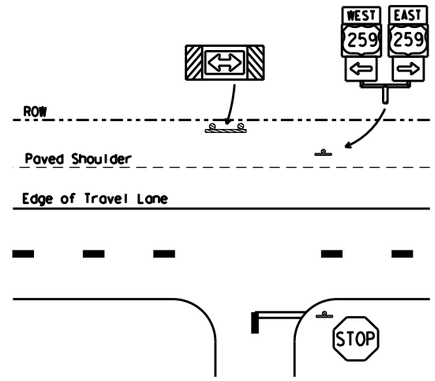
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

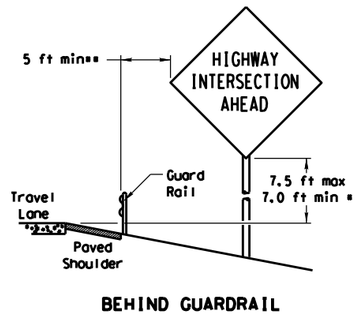
T-INTERSECTION



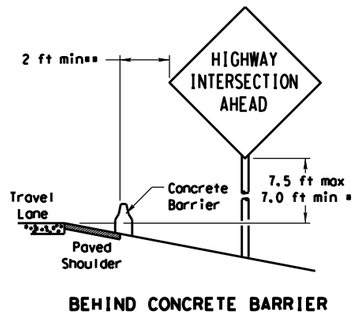
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

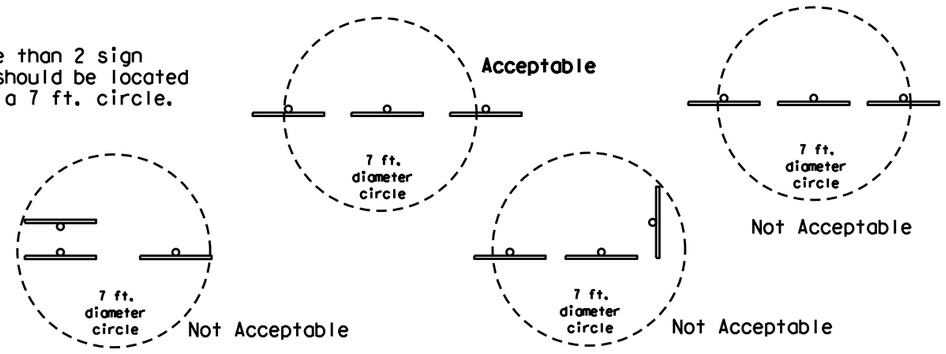
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

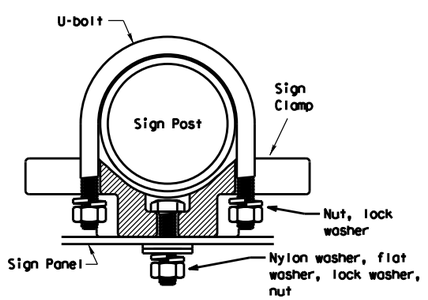
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

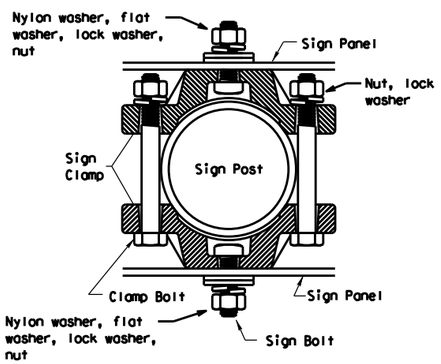


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

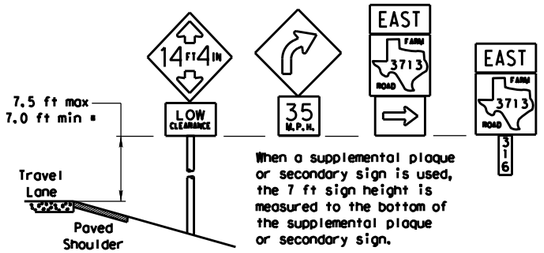
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



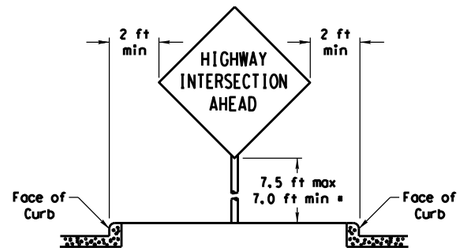
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



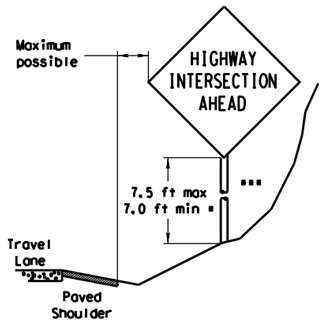
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

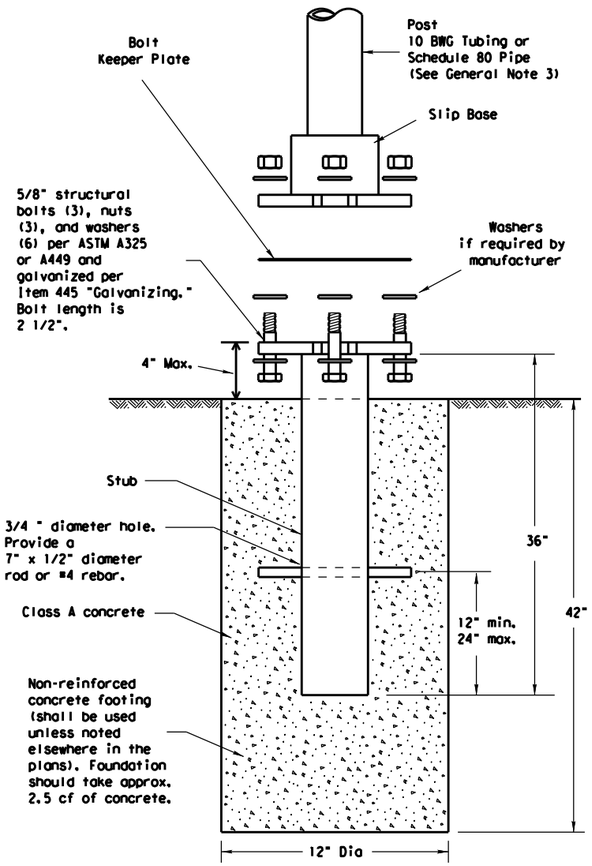
9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0924	06	560	CS
DIST	COUNTY		SHEET NO.
ELP	EL PASO		115

26A

DATE: $DATE$ $TIME$
FILE: $FILE$

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

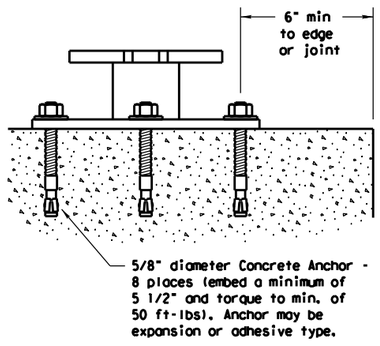
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

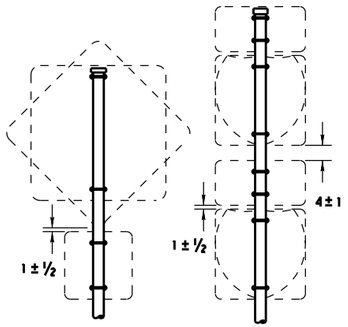
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

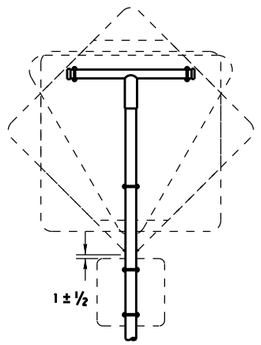
SMD(SLIP-1)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		116

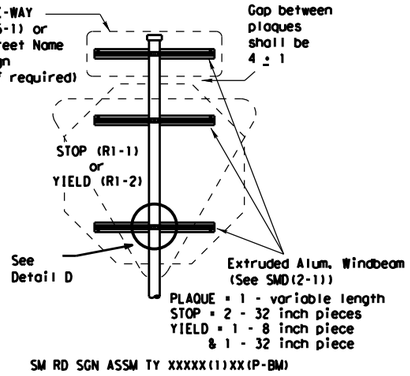
DATE: $DATE$ $TIME$
FILE: $FILE$



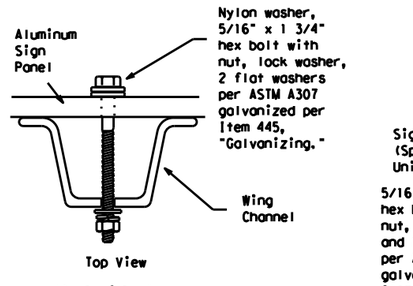
SM RD SGN ASSM TY XXXXX(1)XX(P)



SM RD SGN ASSM TY XXXXX(1)XX(T)

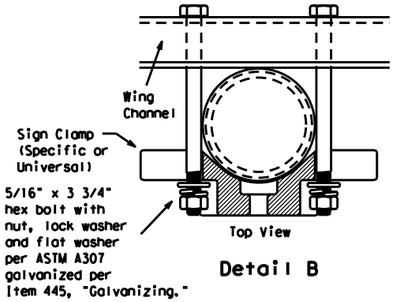


SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



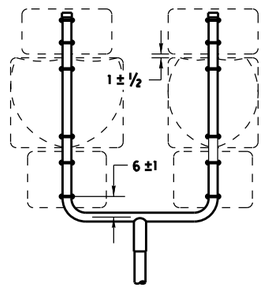
Top View

Detail A

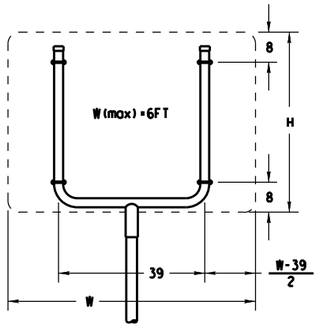


Top View

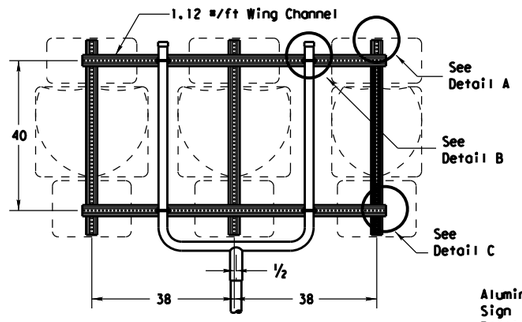
Detail B



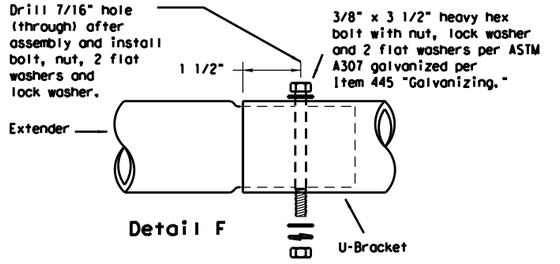
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

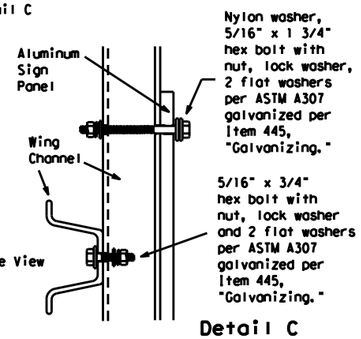


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

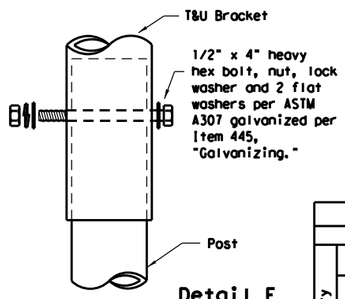


Detail F

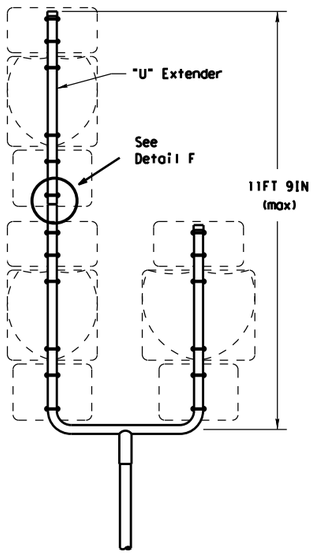
Splices shall only be allowed behind the sign substrate.



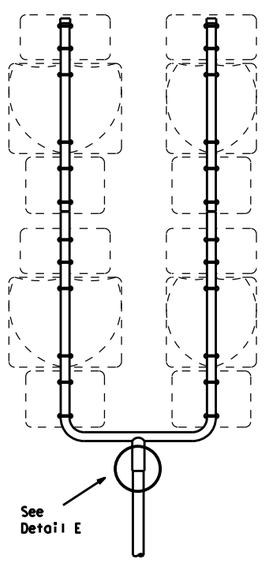
Detail C



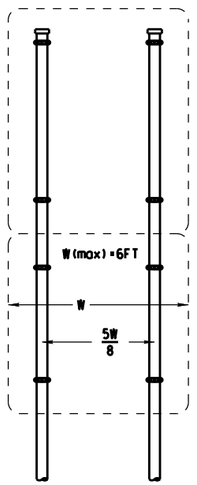
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

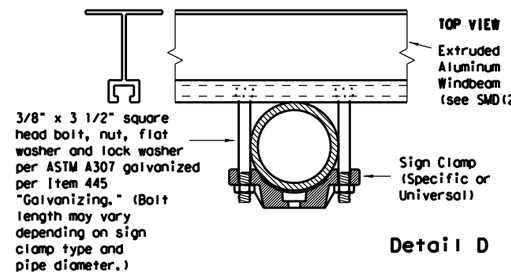


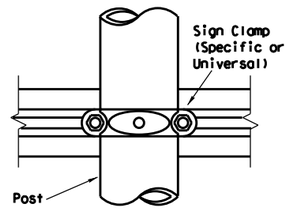
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



SM RD SGN ASSYM TY XXXXX(2)XX(P)

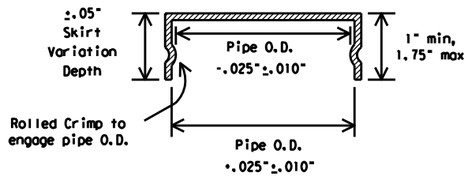
SIDE VIEW





Detail D

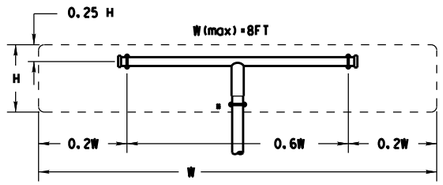
FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.



SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

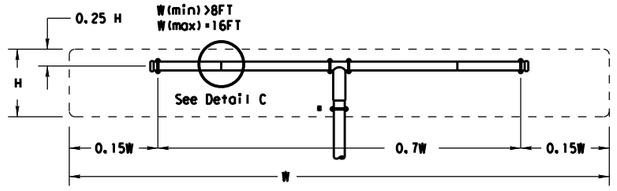
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

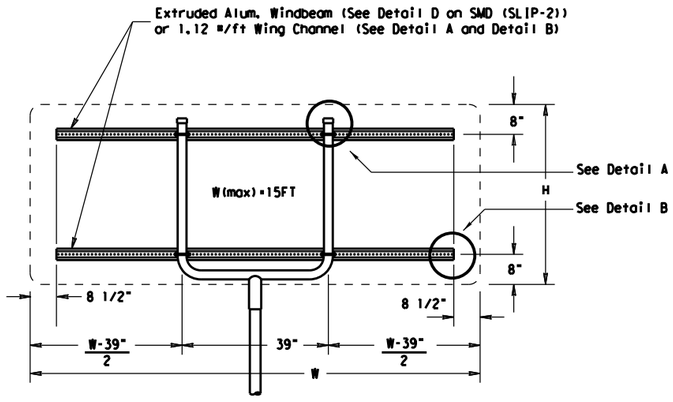
SMD(SLIP-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		117

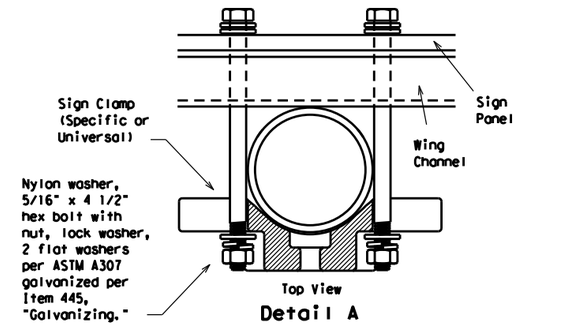
DATE: $DATE$ $TIME$
FILE: $FILE$



SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(= - See Note 12)

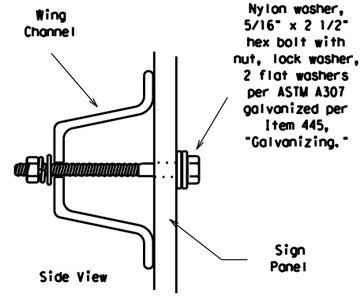


SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

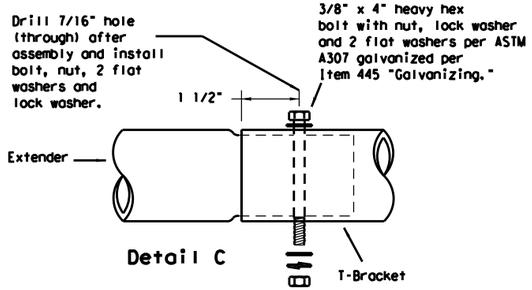


Top View

Detail A

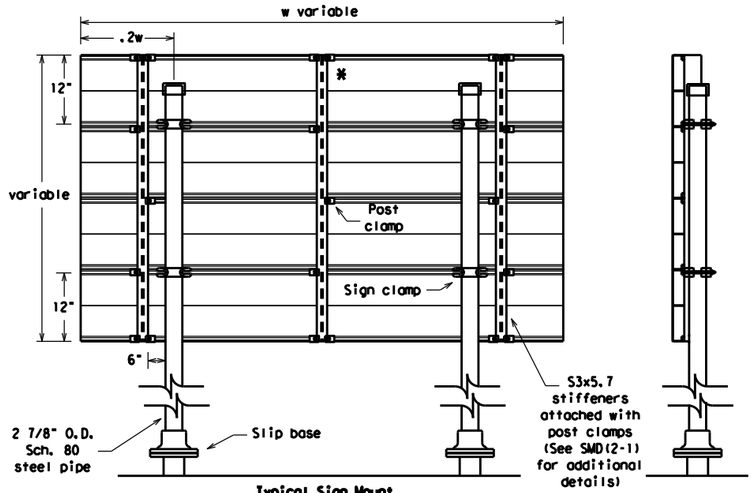


Detail B



Detail C

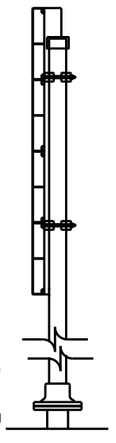
Splices shall only be allowed behind the sign substrate.



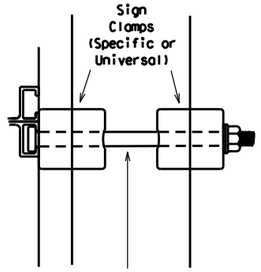
Typical Sign Mount

SM RD SGN ASSM TY S80(2)XX(P-EXAL)

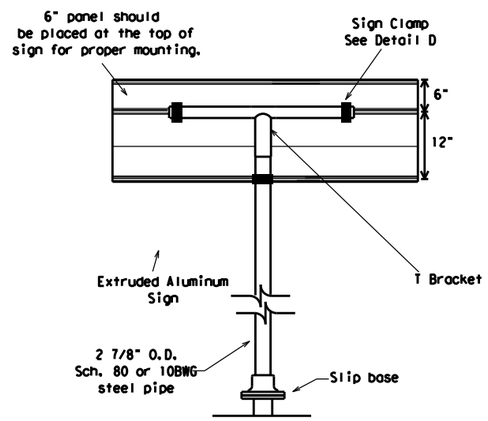
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



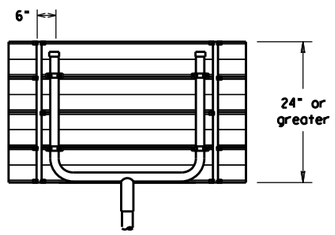
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

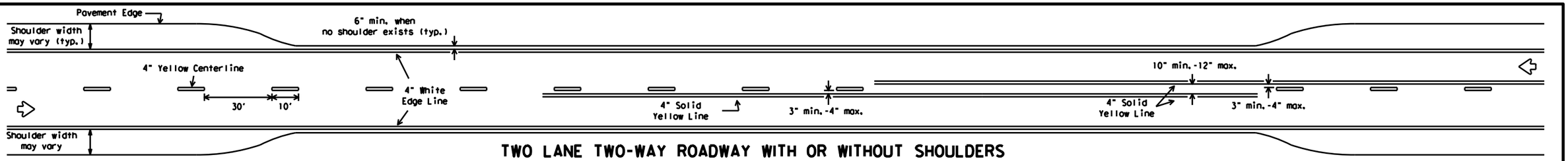
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

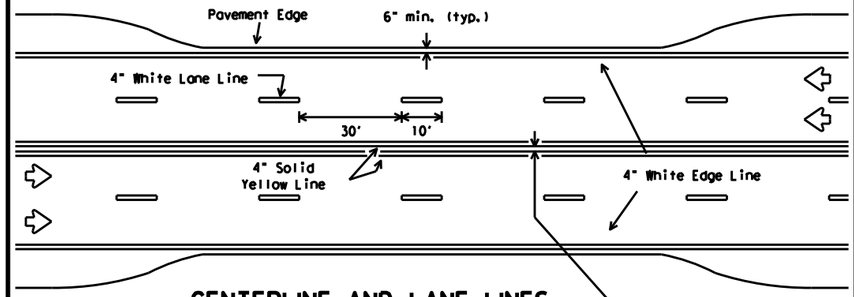
SMD(SLIP-3)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		118

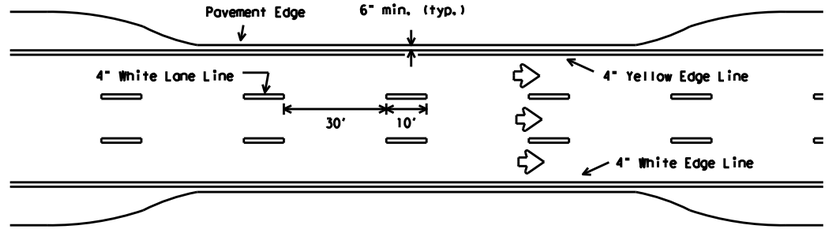
DATE: $DATE$ $TIME$
FILE: $FILE$



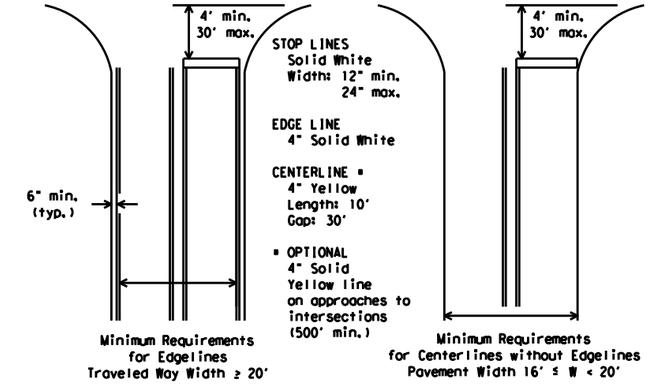
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

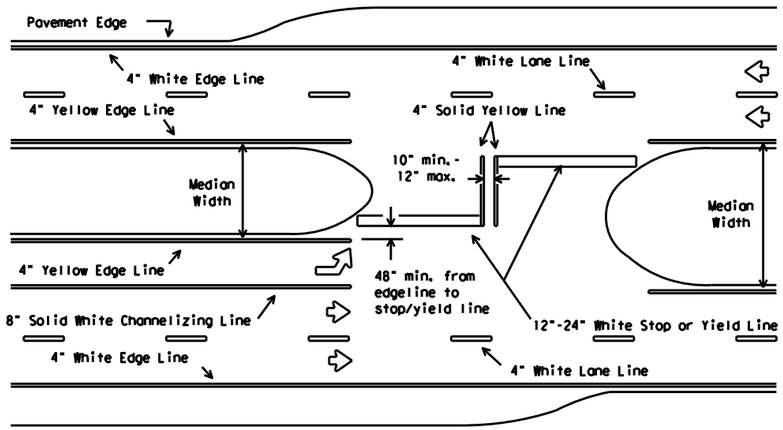


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



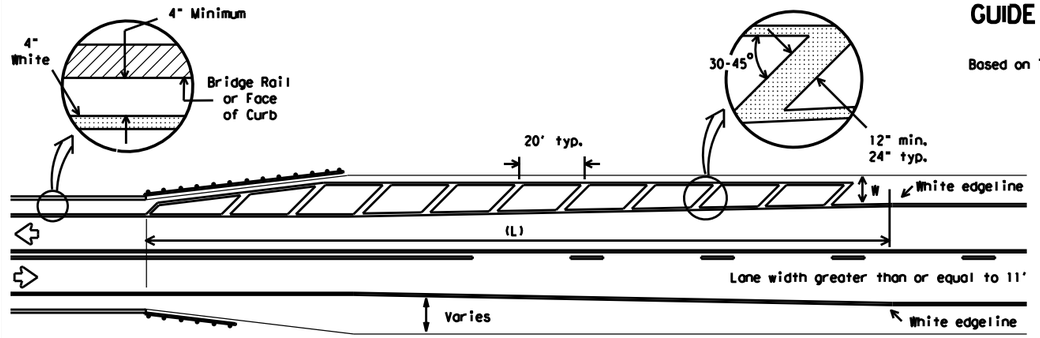
GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

L=Length of Crosshatching (FT.) W=Width of Offset (FT.) S=Posted Speed (MPH)

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:

$L = 8 \times 70 = 560$ ft.

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:

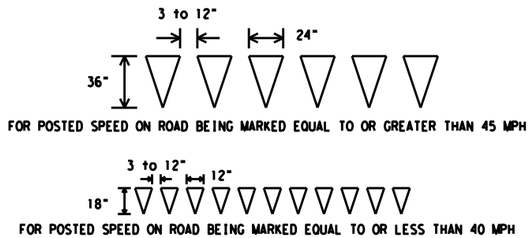
$L = 4(40)^2 / 60 = 106.67$ ft. rounded to 110 ft.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



YIELD LINES

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-12

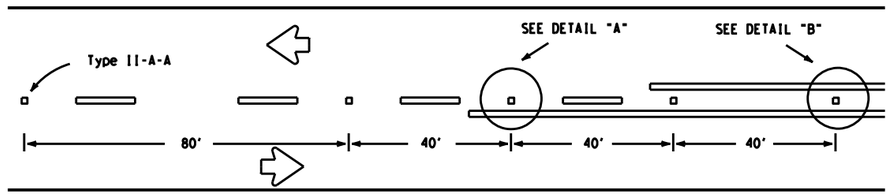
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12	0924	06	560	CS
5-00	DIST	COUNTY		SHEET NO.
8-00	ELP	EL PASO		119
3-03				

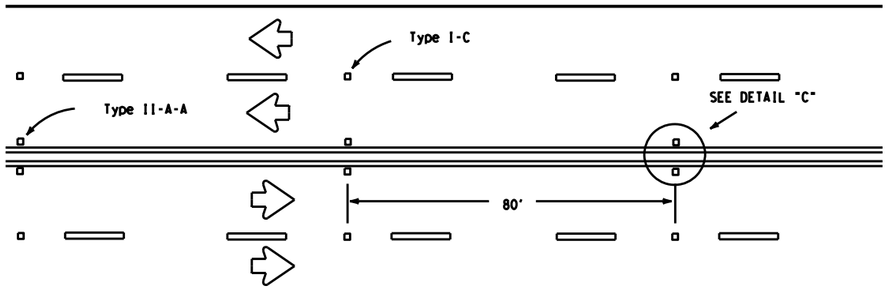
22A

DATE: $DATE$ $TIME$
FILE: $FILE$

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

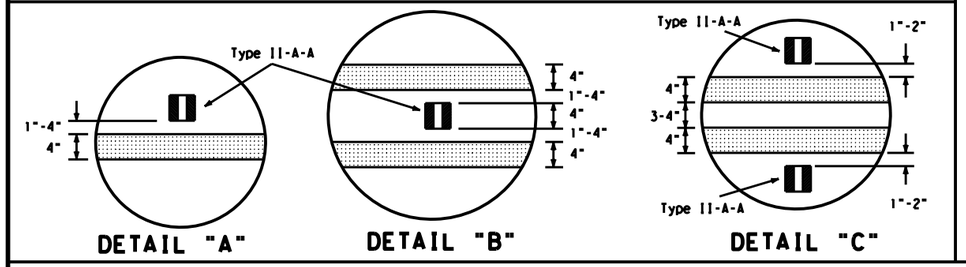


CENTERLINE FOR ALL TWO LANE ROADWAYS

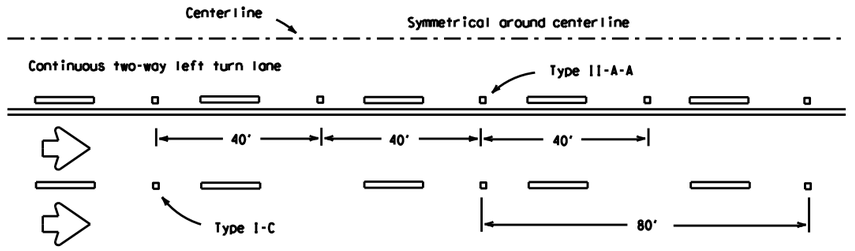


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

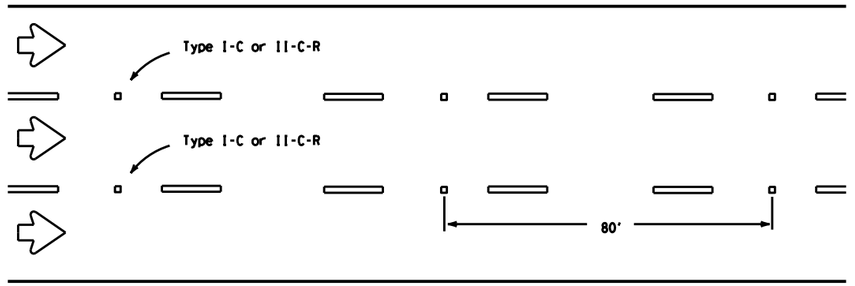
Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.



DETAIL "A" DETAIL "B" DETAIL "C"

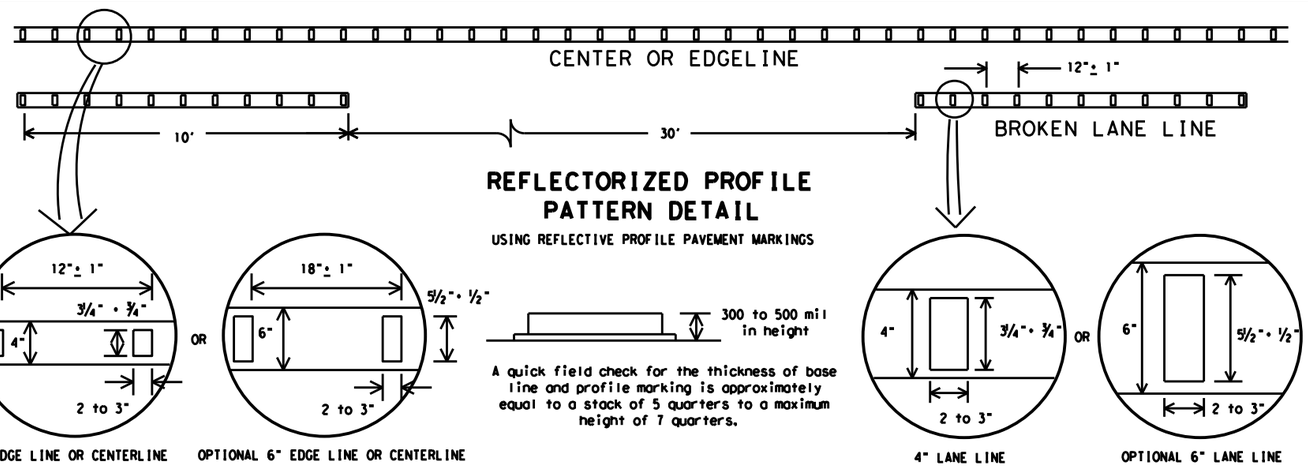


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



4" EDGE LINE OR CENTERLINE — OPTIONAL 6" EDGE LINE OR CENTERLINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

4" LANE LINE — OPTIONAL 6" LANE LINE

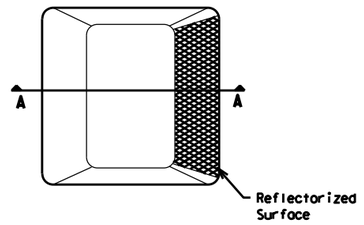
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

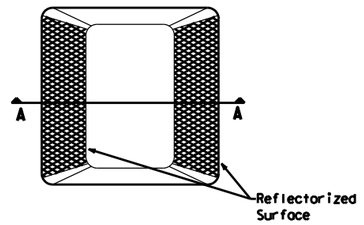
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

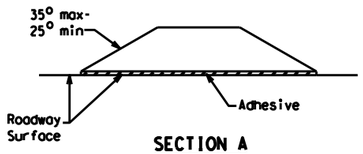
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

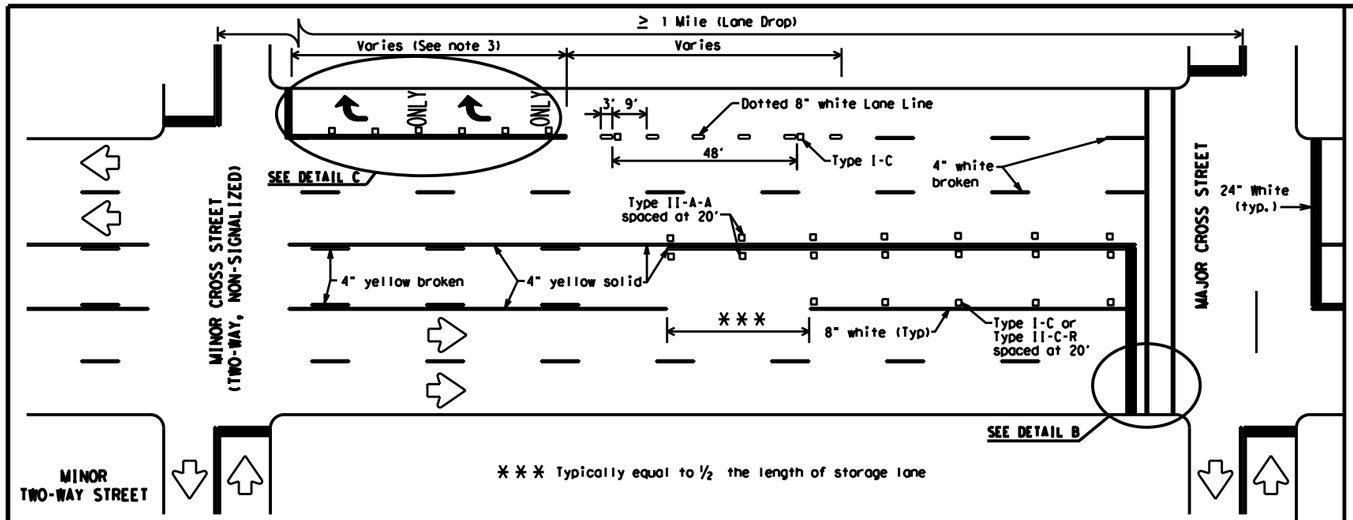
POSITION GUIDANCE USING RAISED MARKERS
REFLECTORIZED PROFILE MARKINGS
PM(2)-12

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

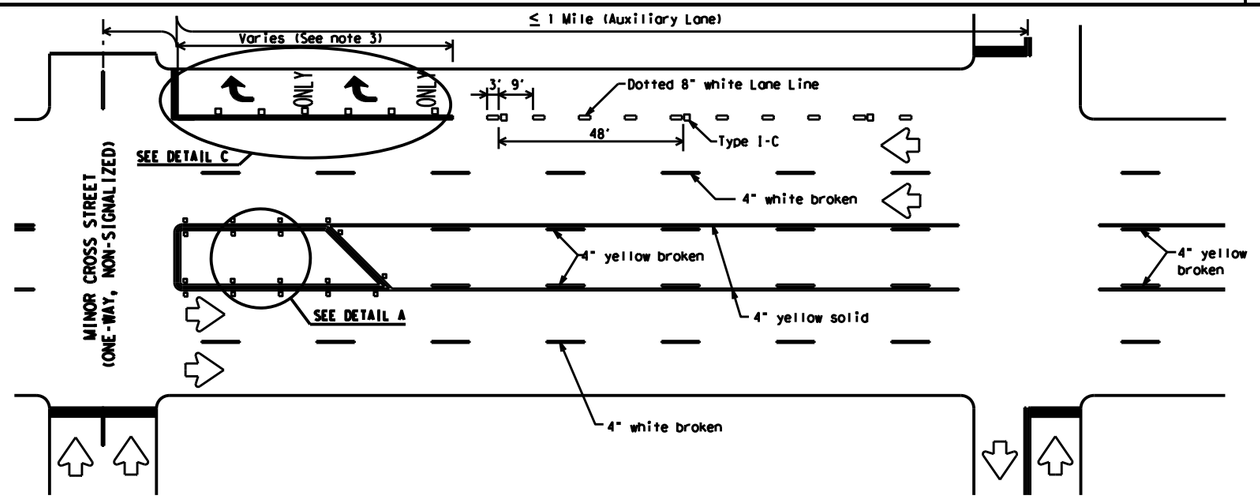
REVISIONS		CONT	SECT	JOB	HIGHWAY
4-92	2-10	0924	06	560	CS
5-00	2-12	DIST	COUNTY		SHEET NO.
8-00		ELP	EL PASO		120
2-08					

22B

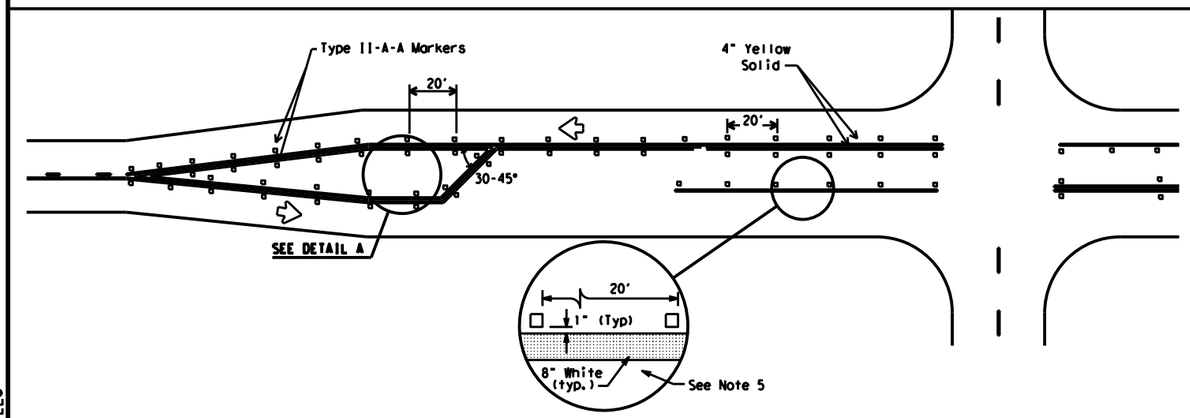
DATE: $DATE$ $TIME$
FILE: $FILE$



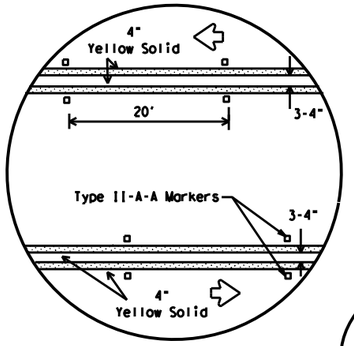
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



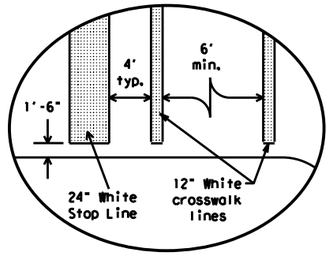
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS

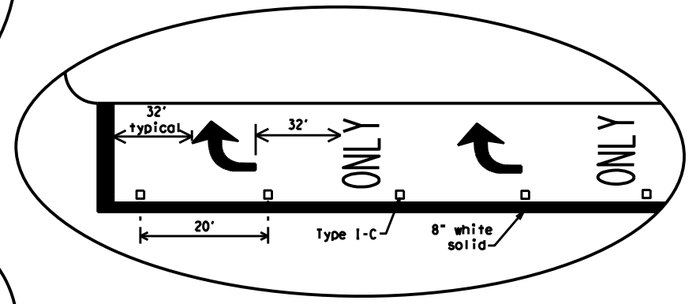


DETAIL A



Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

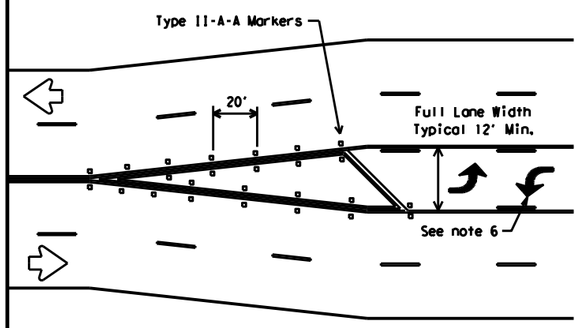
DETAIL B



DETAIL C

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows as shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS

PM(3)-12

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

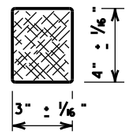
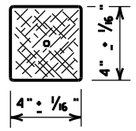
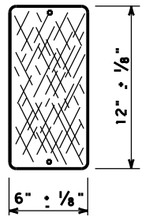
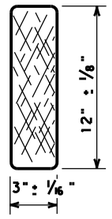
REVISIONS
5-00 2-12
8-00
3-03
2-10

CONT	SECT	JOB	HIGHWAY
0924	06	560	CS
DIST	COUNTY		SHEET NO.
ELP	EL PASO		121

22C

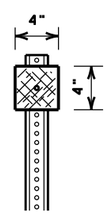
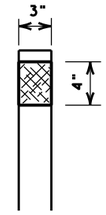
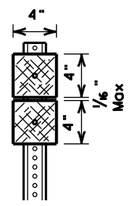
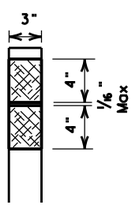
DATE: $DATE$ $TIME$
FILE: $FILE$

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			

NOTE
1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx).
2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX) SZ X (XXX) XXX (XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
FLX = Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXX) XXX (XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

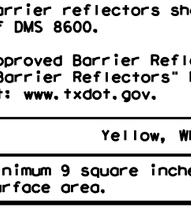
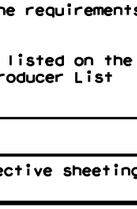
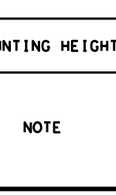
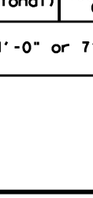
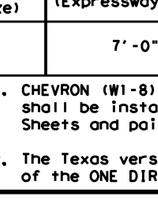
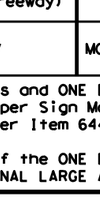
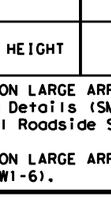
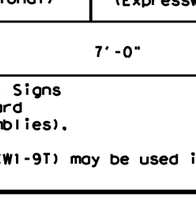
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
FLX = Flexible Post
TWT = Thin Walled Tubing

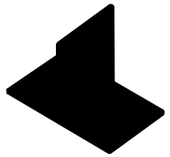
TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE		 3-Size 2 reflector units	 1-Size 3 reflector unit	 3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	FLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

BARRIER REFLECTORS (BRF)

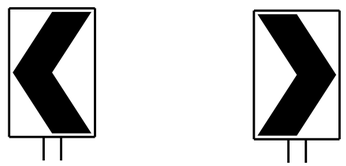
	GF1	GF2	CTB
DEVICE			

1. Barrier reflectors shall meet the requirements of DMS 8600.
2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.

SHEETING: Yellow, White, Red

NOTE
1. Minimum 9 square inches of reflective sheeting surface area.

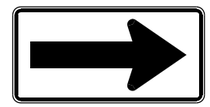
CHEVRONS

DEVICE:  W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE:  W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

NOTE:
Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION
D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10	ELP	EL PASO		122

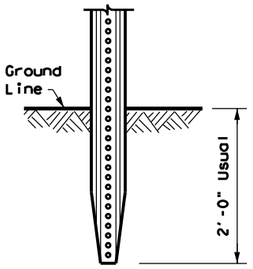
20A

DATE: $DATE$ $TIME$
FILE: $FILE$

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND



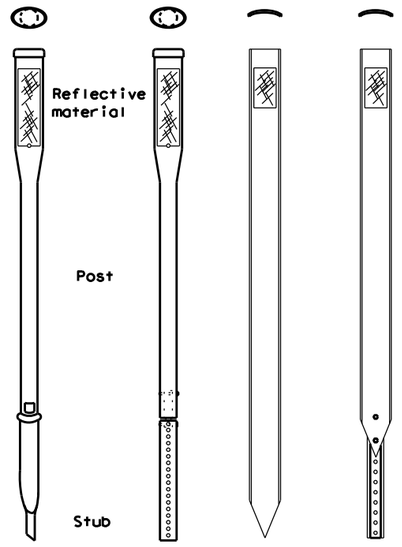
NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

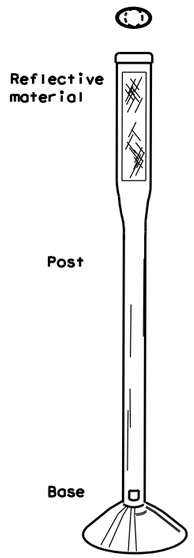
EMBEDDED

FLEXIBLE POSTS (FLX)

GND



SRF



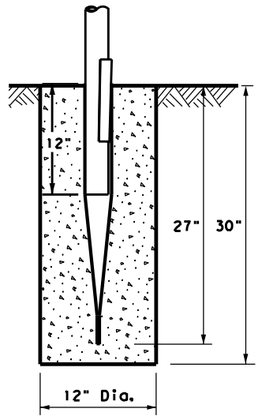
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.

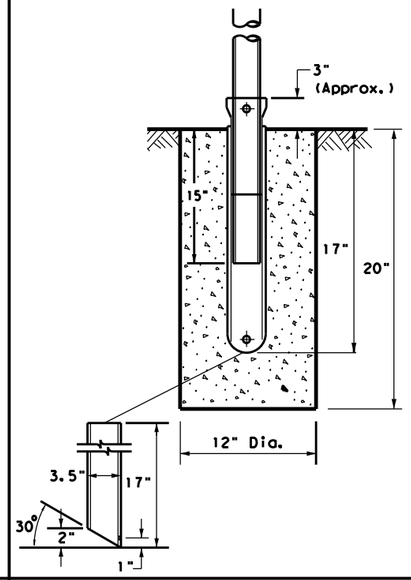
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

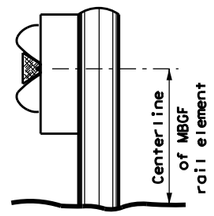
NOTE

1. Install per manufacturer's recommendations.

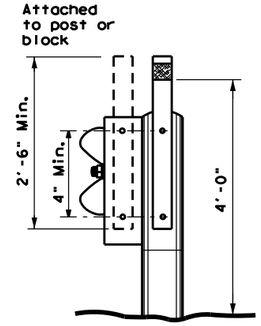
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

GF1

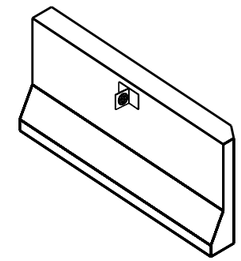


GF2



CONCRETE BARRIER / BRIDGE RAIL

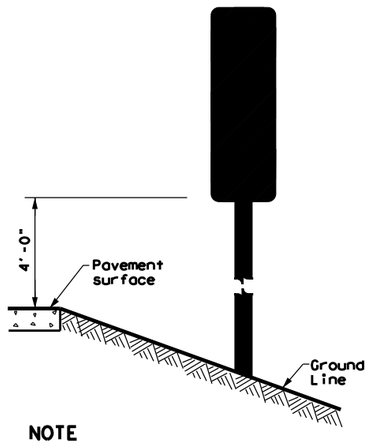
CTB



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.

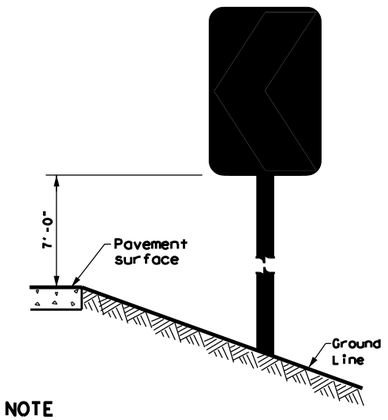
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

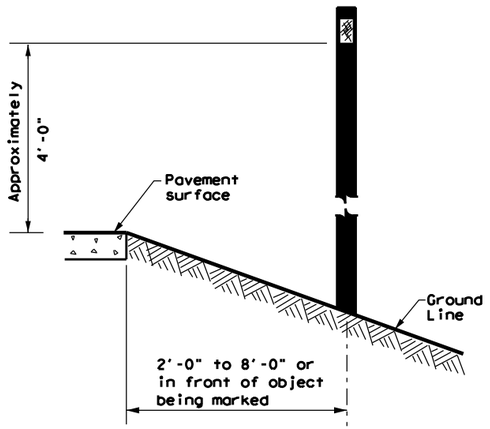
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTIONAL LARGE ARROW sign (W1-9T)shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-15

FILE: dom2-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10	ELP	EL PASO		123

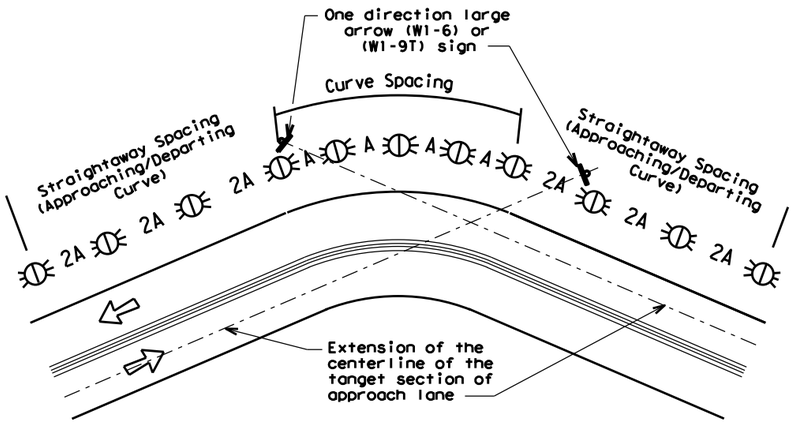
20B

DATE: $DATE$ $TIME$
FILE: $FILE$

USE OF WARNING DEVICES AT CURVES WITH ADVISORY SPEED LIMITS

Amount by which Advisory Speed Is less than Posted Speed	Warning Devices Needed
5 MPH & 10 MPH	RPMs
15 MPH & 20 MPH	RPMs, and Delineators or RPMs and ONE DIRECTION LARGE ARROW (W1-6) or (W1-9T) sign
25 MPH & Greater	RPMs and Chevrons

SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES

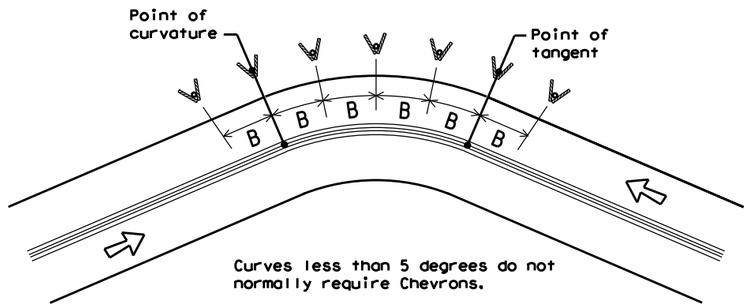


Curves less than 1 degree do not normally require delineators.

NOTE

ONE DIRECTIONAL LARGE ARROW (W1-6) or(W1-9T) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



Curves less than 5 degrees do not normally require Chevrons.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve[1]	Single delineators on right side	See delineator spacing table
FRWY/EXP. Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 4 on D&OM(4))	100 feet on ramp tangents. Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves).
Acceleration/Deceleration Lane	Double delineators (see Detail 4 on D&OM(4))	100 feet (See Detail 4 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concreteland Metal Beam Guard Fence or CTB	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end. Undivided 2-lane highways - Object marker on approach and departure end.	Requires Type 3 Object Marker or reflective sheeting provided by manufacturer per D & OM(VIA).
Bridges with no Approach Rail	Type 3 Object Marker at end of rail and 3 single delineators approaching rail.	See Detail 2 on D & OM(4)
Reduced Width Approaches to Bridge Rail	Type 2 Object Markers and 3 single delineators approaching bridge.	See Detail 1 on D & OM(4)
Culverts without MBGF	Type 2 Object Markers	See Detail 3 on D & OM(4)
Crossovers	Double yellow delineators or RPM's	See Detail 5 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Delineators not required in urban areas with continuous illumination.
2. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
3. Barrier reflectors may be used to replace required delineators.
4. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

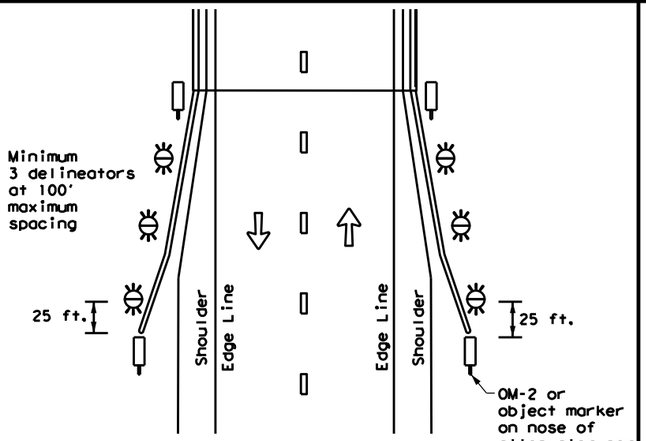
D & OM(3)-15B

FILE: dom3-15b.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
3-15	DIST	COUNTY		SHEET NO.
8-15	ELP	EL PASO		124

20C

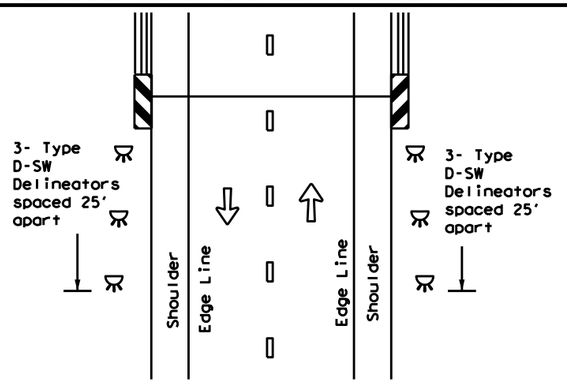
DATE: $DATE$ $TIME$
FILE: $FILE$

TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH



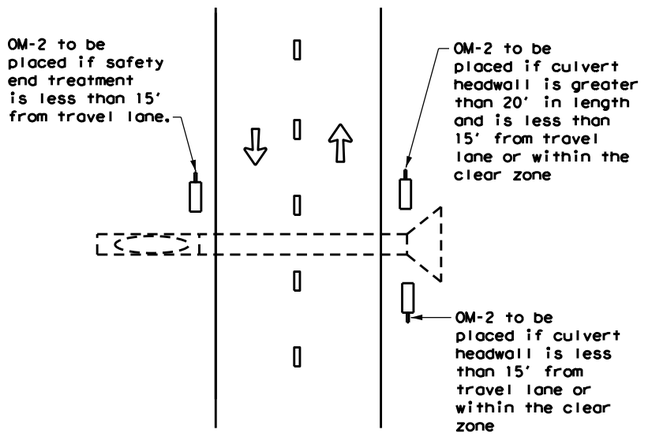
DETAIL 1

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



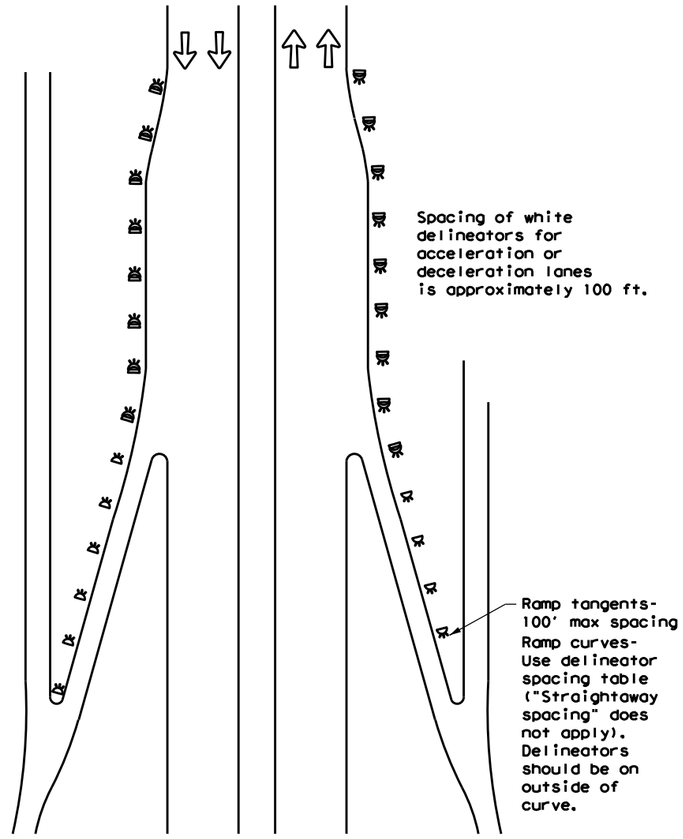
DETAIL 2

FOR CULVERTS WITHOUT MBGF



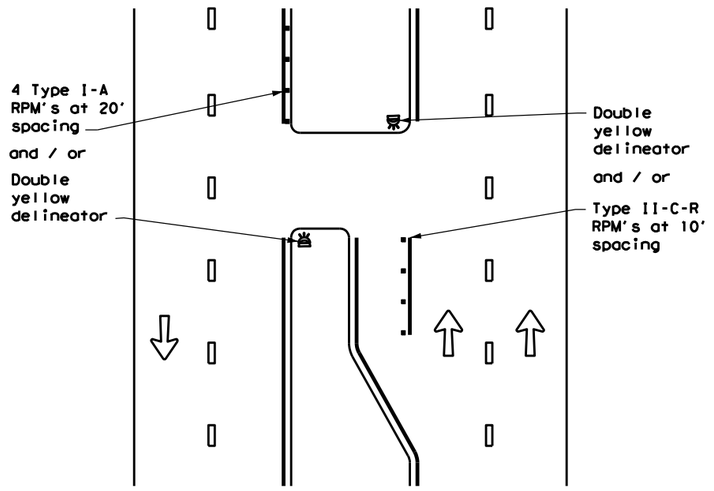
DETAIL 3

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



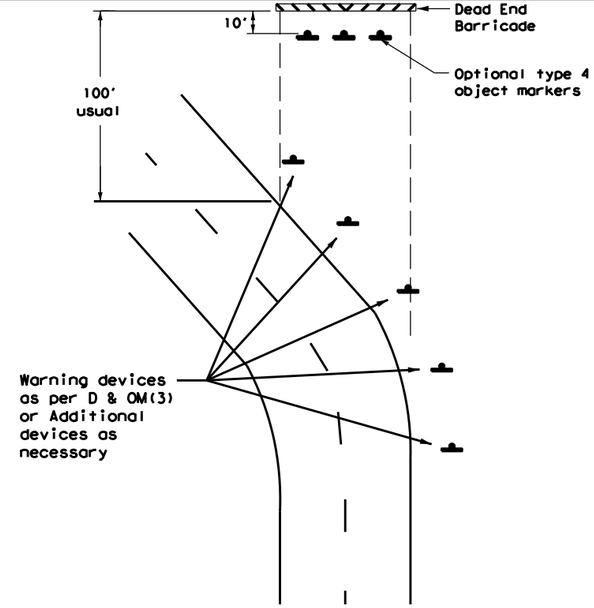
DETAIL 4

CROSSOVERS



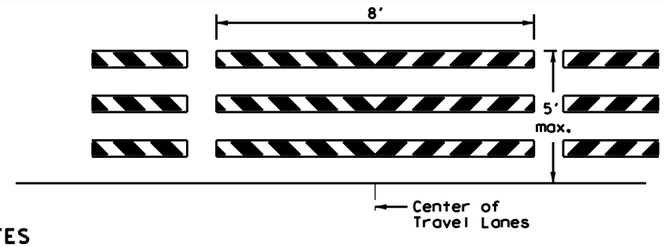
DETAIL 5

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 6

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 7

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

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DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-15

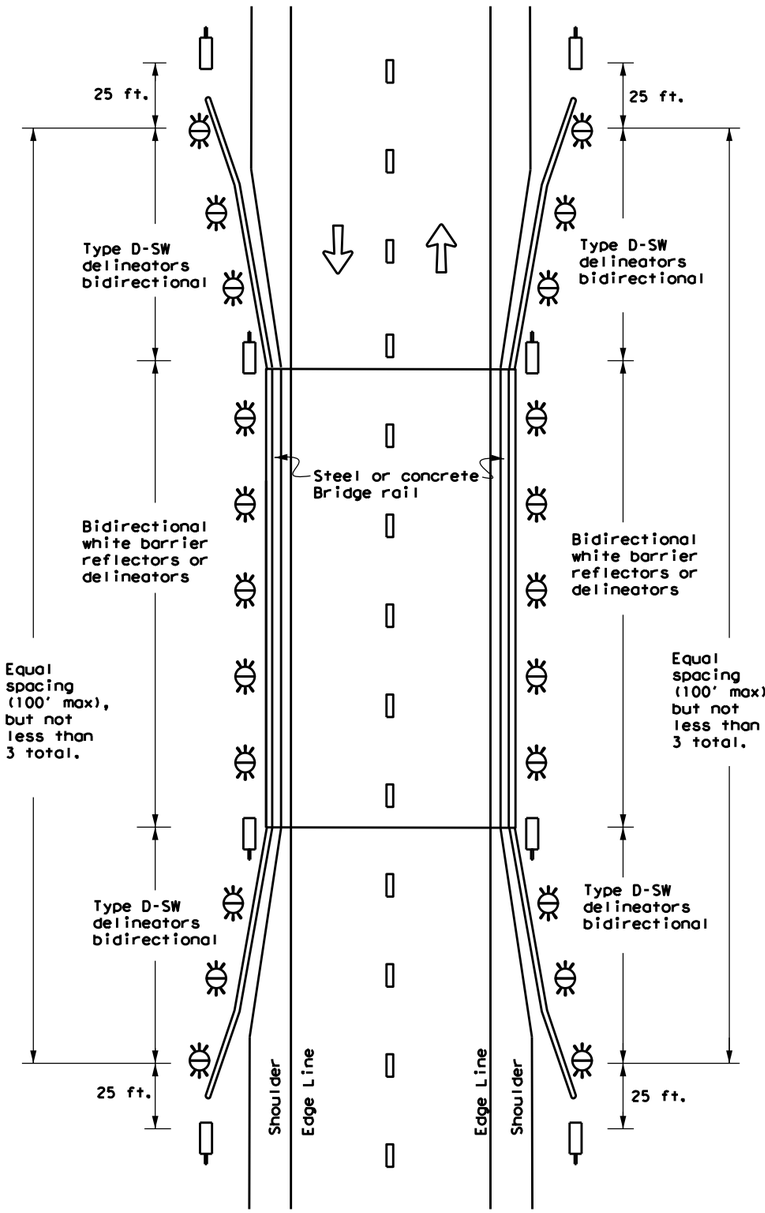
FILE: dom4-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
3-15	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		125

20D

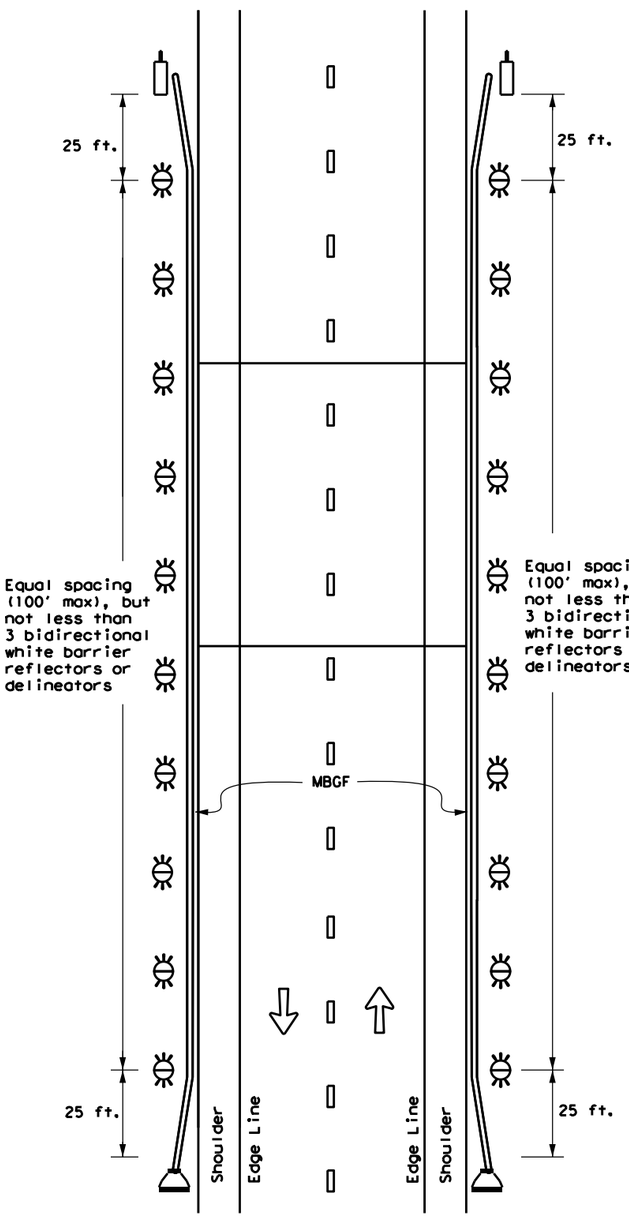
DATE: $DATE$ $TIME$
FILE: $FILE$

DATE: $DATE$ $TIME$
FILE: $FILE$

TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



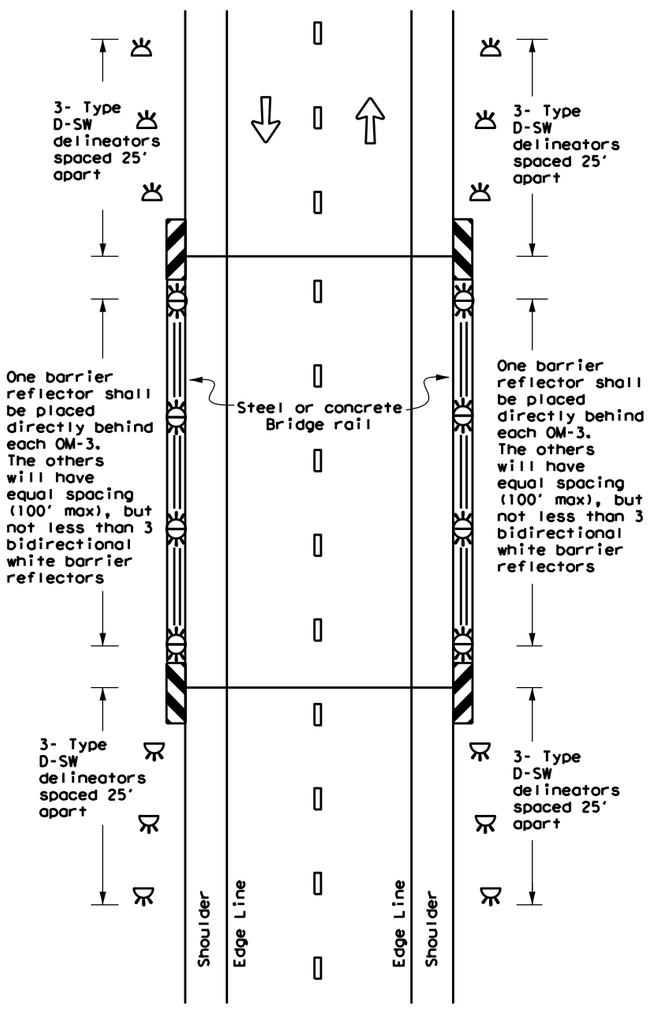
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

If terminal ends include an object marker, there is no need to install an OM-2 in front of terminal.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	TRAFFIC FLOW

Texas Department of Transportation

Traffic Operations Division Standard

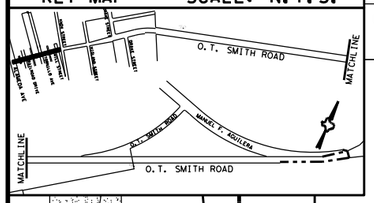
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-15

FILE: dom5-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		126

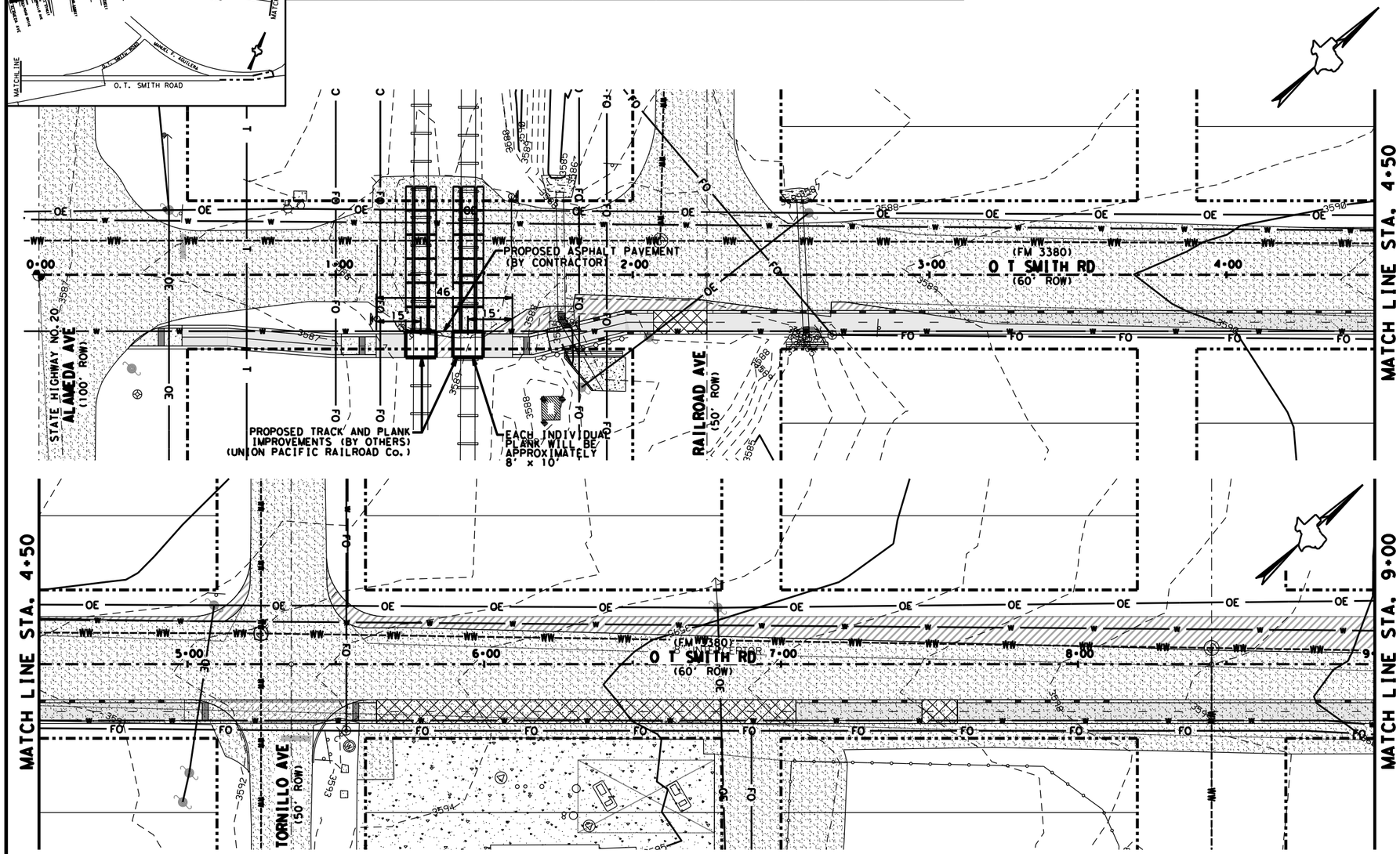
20E

KEY-MAP SCALE: N.T.S.



UTILITY COMPANY CONTACTS

EPE DISTRIBUTION: MANNY ORONA (915) 521-4701	EPE TRANSMISSION: MARIANA MERCADO-PRIETO (915) 521-4676	EPCTWID: FRANCELIA VEGA (915) 764-2966	TISD: ROSA VEGA-BARRIO (915) 765-3000	SPRINT: DAVID JETER (559) 408-5760	CENTURY LINK: JOHN MELENDREZ (505) 767-7444	VERIZON: MANNY ARMENDARIZ (915) 449-9435	WINDSTREAM: ROCKY JENKS (806) 637-5577



LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- SANITARY SEWER LINE
- WATER LINE
- GAS LINE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND TELEPHONE LINE
- UNDERGROUND FIBER OPTIC CABLE LINE
- IRON FENCE/GUARD RAIL
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- SINGLE RAILROAD TRACKS
- 3901 1' CONTOUR INTERVAL
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- MONITORING/TEST WELL
- BOLLARD
- ELECTRIC/ TRAFFIC SIGNAL BOX
- GUY ANCHOR
- FOUND COUNTY MONUMENT
- FOUND PROPERTY CORNER (REBAR)
- (2) BLOCK NUMBER

0 20 40
SCALE: 1"=40'

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

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

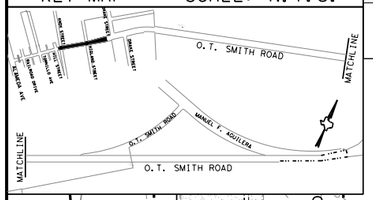
TORNILLO SHARED USE PATH

EXISTING UTILITIES
STA 0+00 TO STA 9+00

SHEET 1 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		127
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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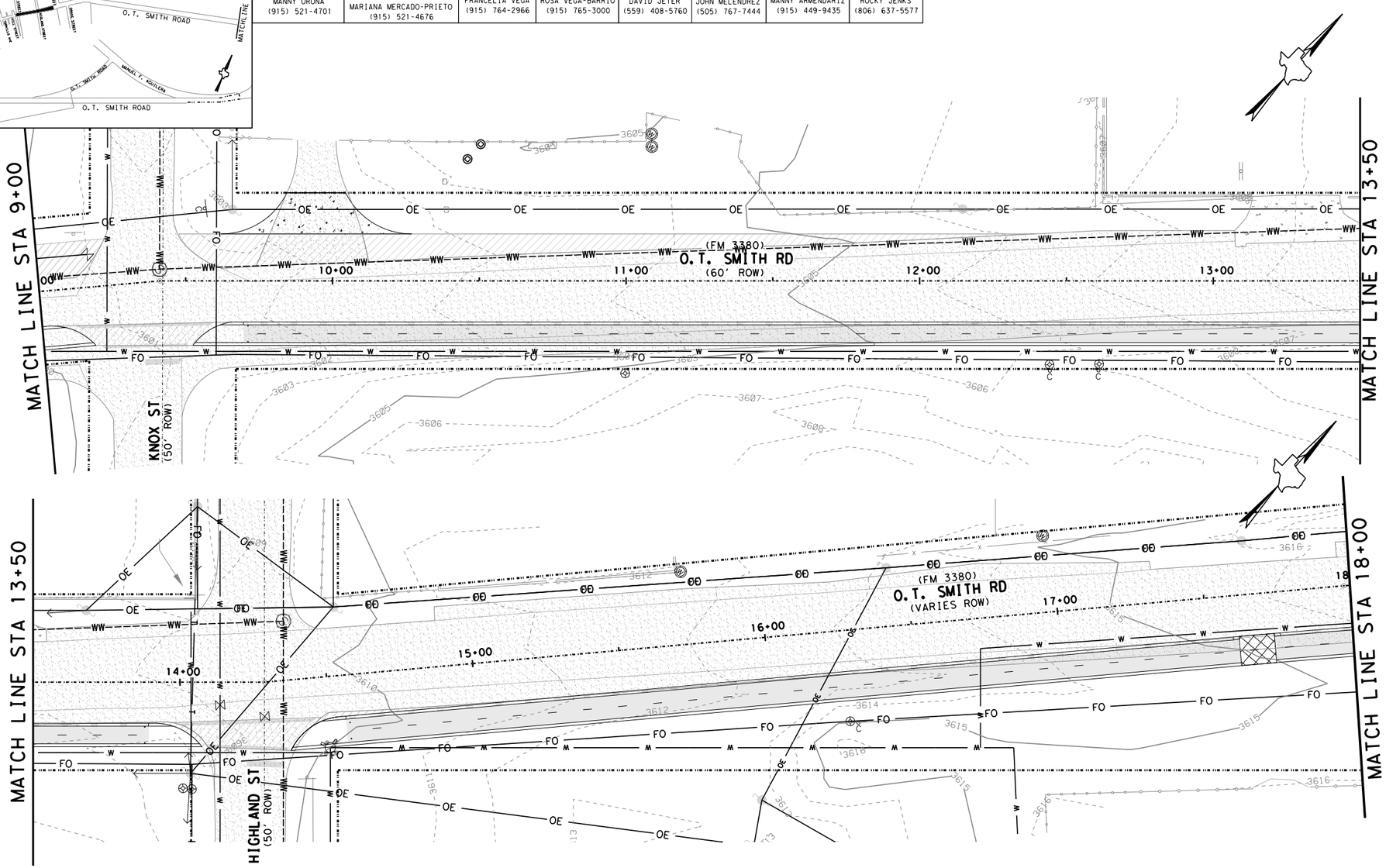

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

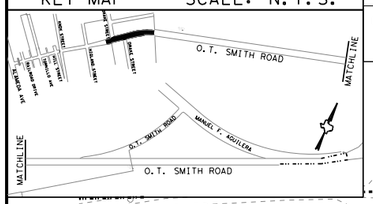
EXISTING UTILITIES

STA 9+00 TO STA 18+00

SHEET 2 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		128
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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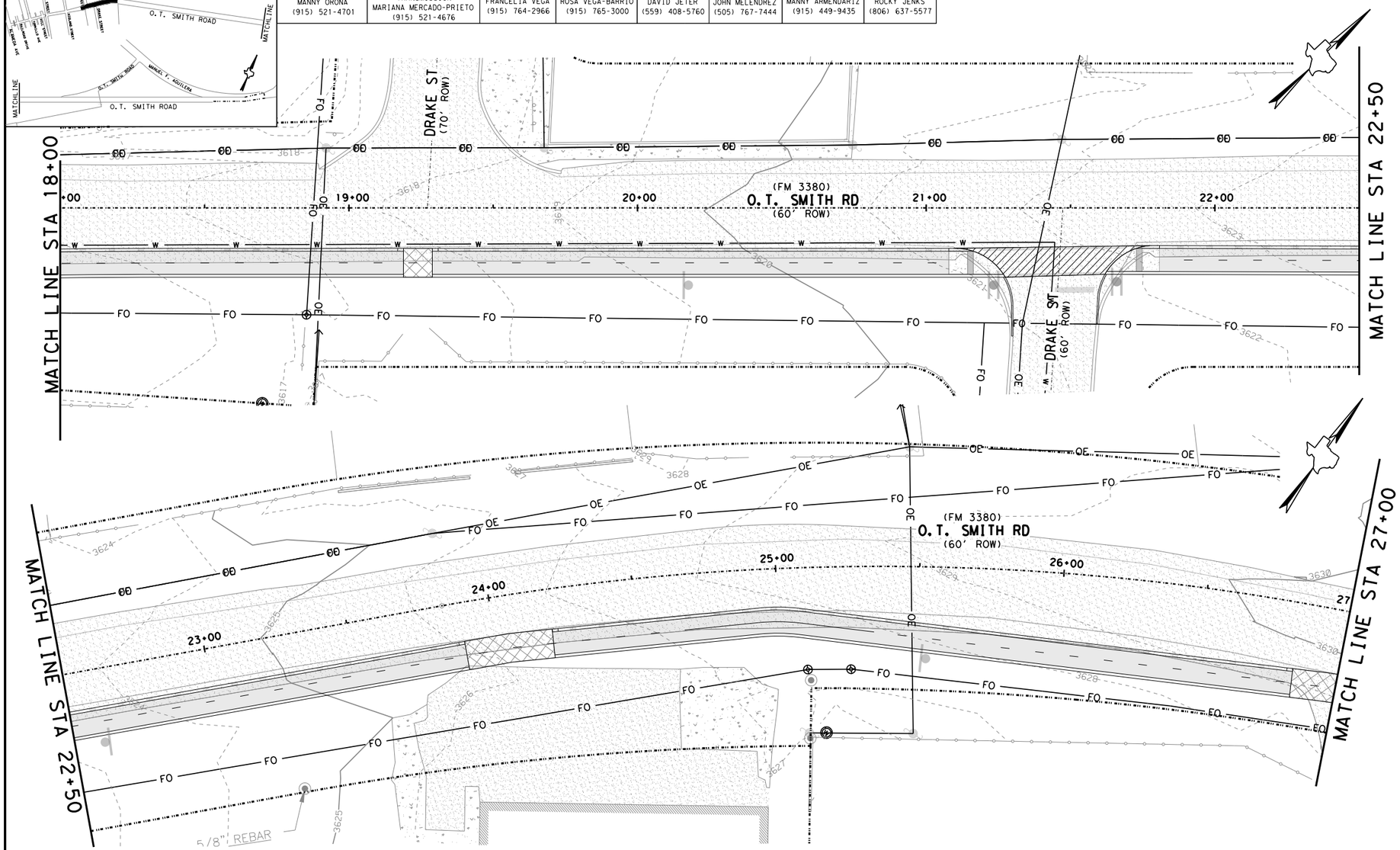

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CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

EXISTING UTILITIES
STA 18+00 TO STA 27+00

SHEET 3 OF 14

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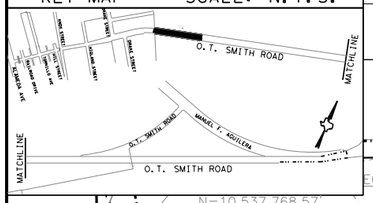

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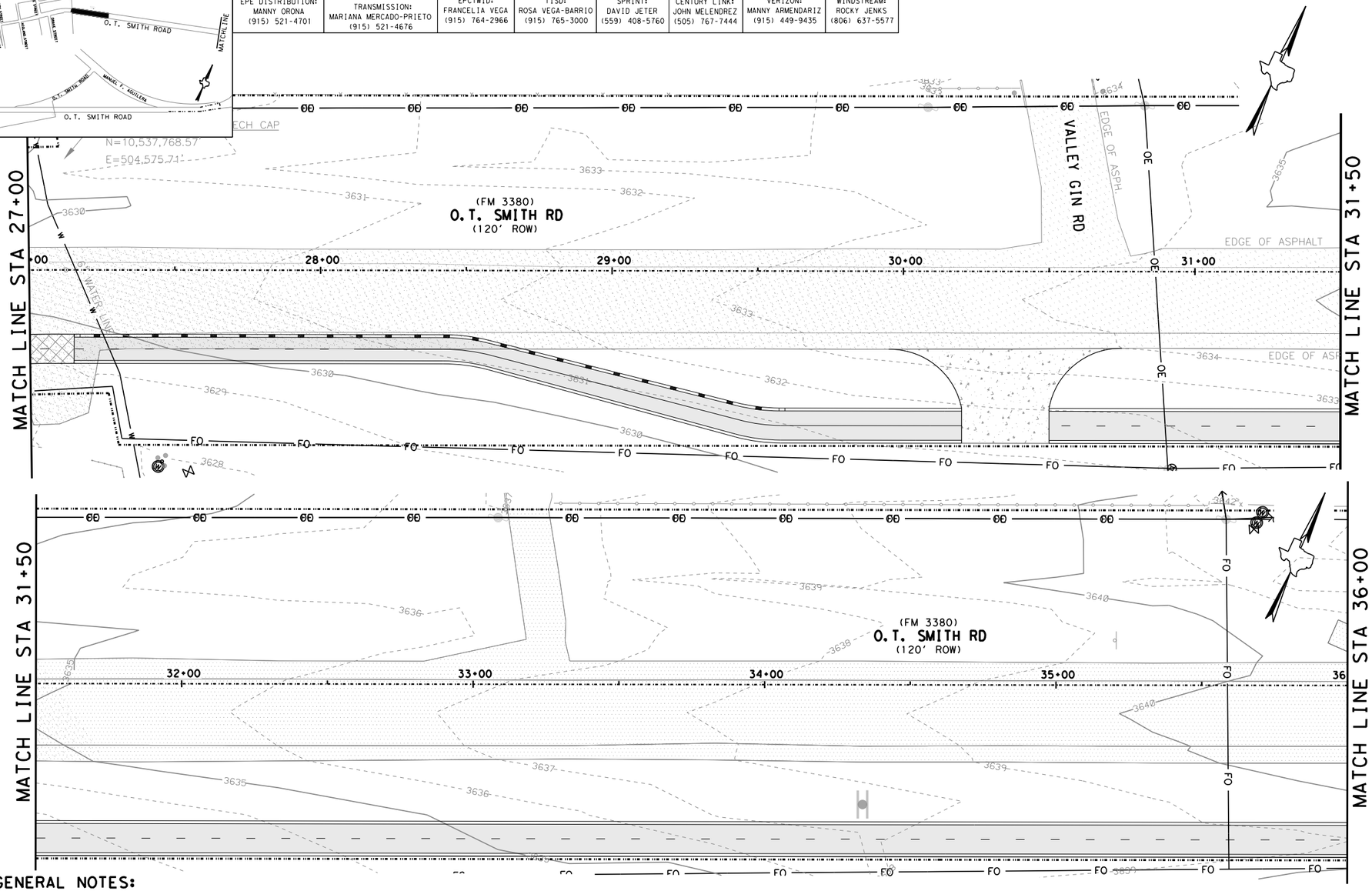

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TBPE Firm Registration No: F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

EXISTING UTILITIES

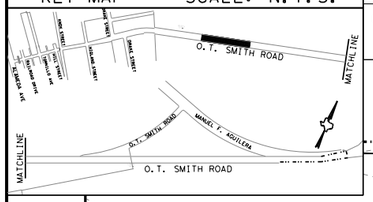
STA 27+00 TO STA 36+00

SHEET 4 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	130

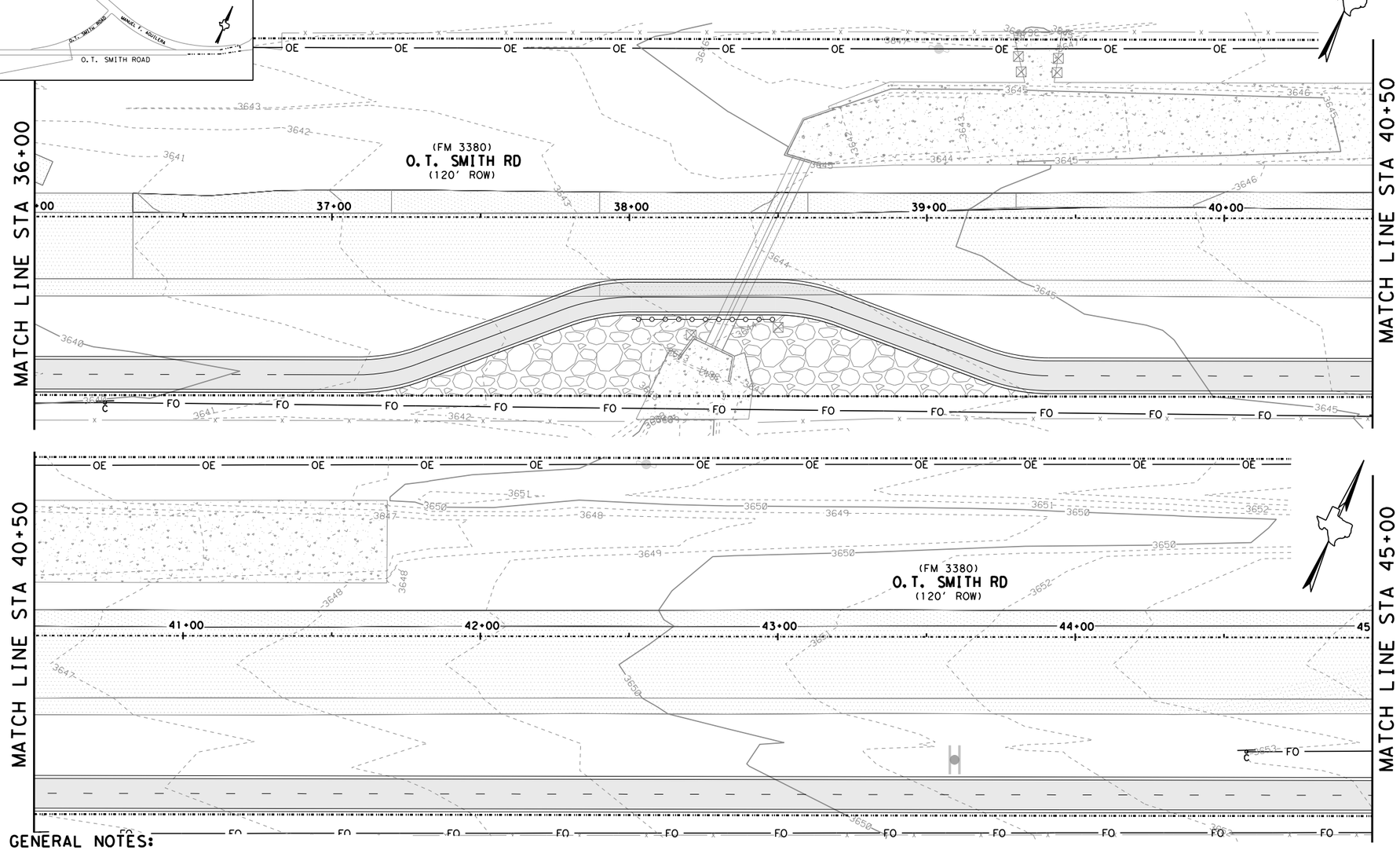
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



UTILITY COMPANY CONTACTS

EPE DISTRIBUTION: MANNY ORONA (915) 521-4701	EPE TRANSMISSION: MARIANA MERCADO-PRIETO (915) 521-4676	EPCTWID: FRANCELIA VEGA (915) 764-2966	TISD: ROSA VEGA-BARRIO (915) 765-3000	SPRINT: DAVID JETER (559) 408-5760	CENTURY LINK: JOHN MELENDREZ (505) 767-7444	VERIZON: MANNY ARMENDARIZ (915) 449-9435	WINDSTREAM: ROCKY JENKS (806) 637-5577



LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- WW — SANITARY SEWER LINE
- W — WATER LINE
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- FOUND PROPERTY CORNER (REBAR)
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SCALE: 1"=40'

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING LOCATIONS PRIOR TO CONSTRUCTION.
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WARNING!
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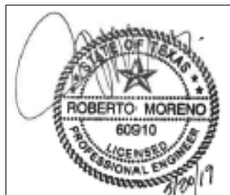


THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

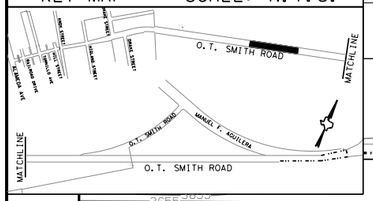
EXISTING UTILITIES

STA 36+00 TO STA 45+00

SHEET 5 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		131
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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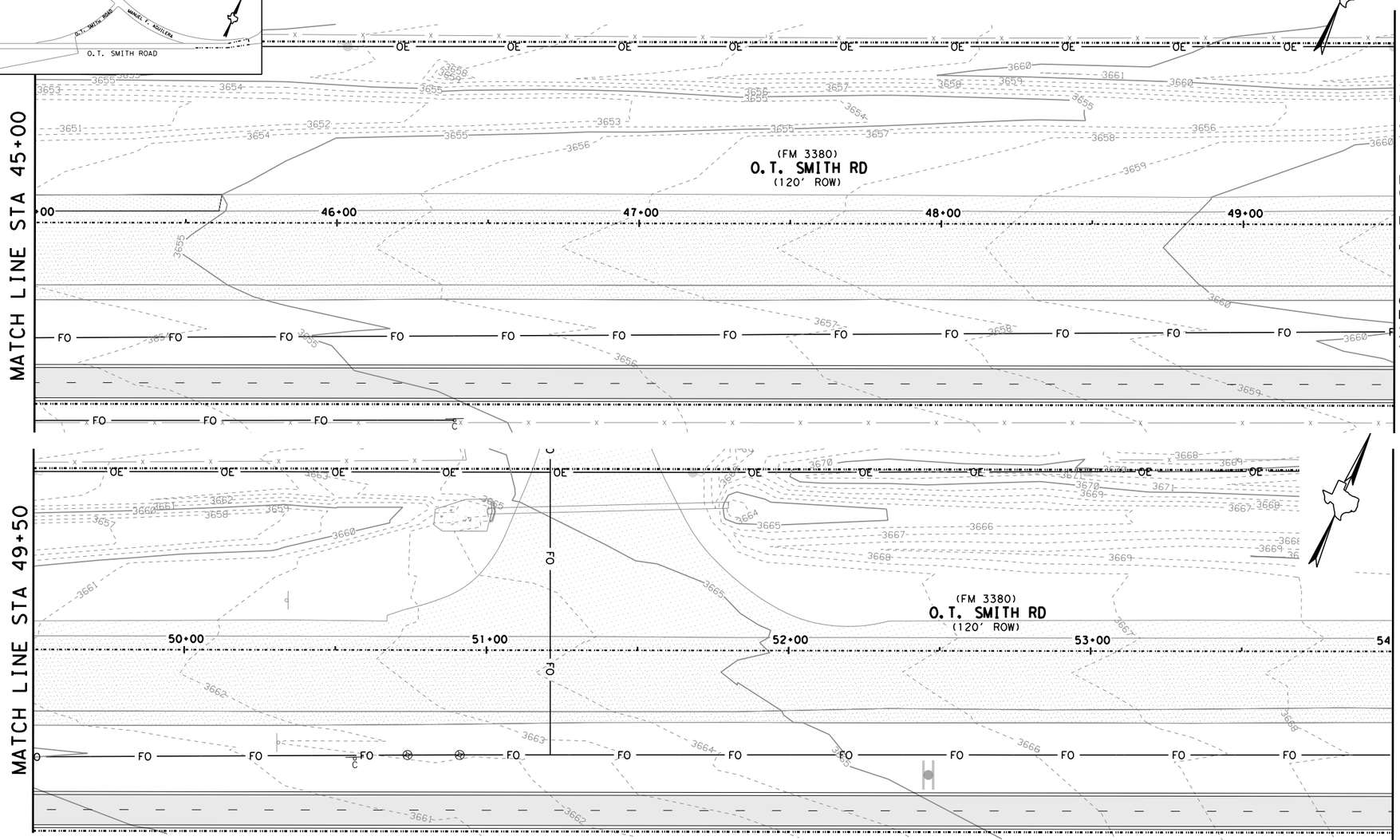

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CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

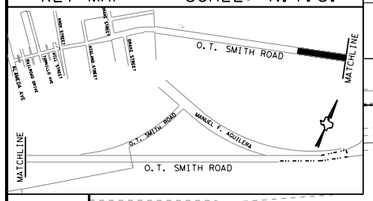
EXISTING UTILITIES

STA 45+00 TO STA 54+00

SHEET 6 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		132
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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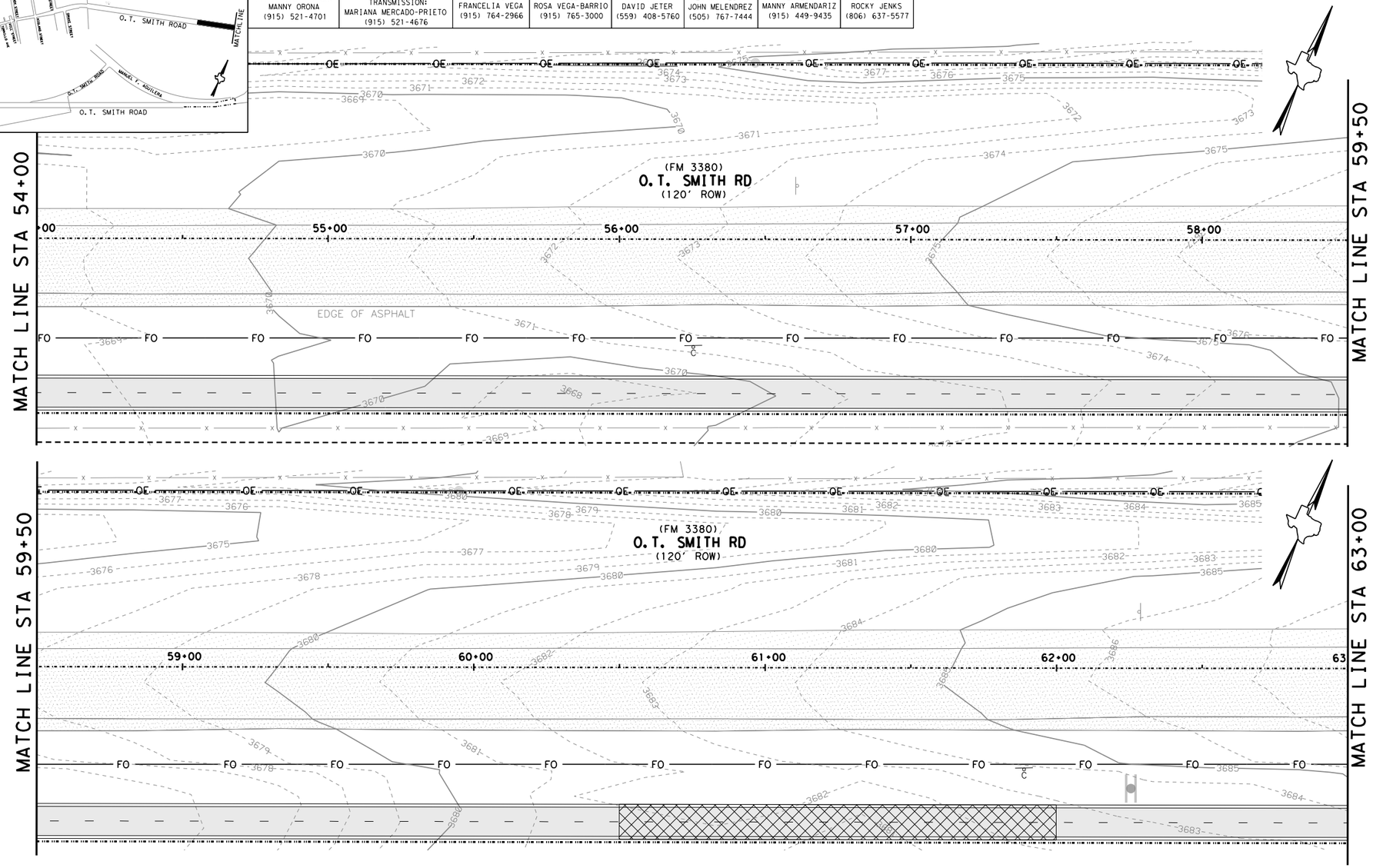

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TORNILLO SHARED USE PATH

EXISTING UTILITIES

STA 54+00 TO STA 63+00

SHEET 7 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		133
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
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KEY-MAP SCALE: N.T.S.

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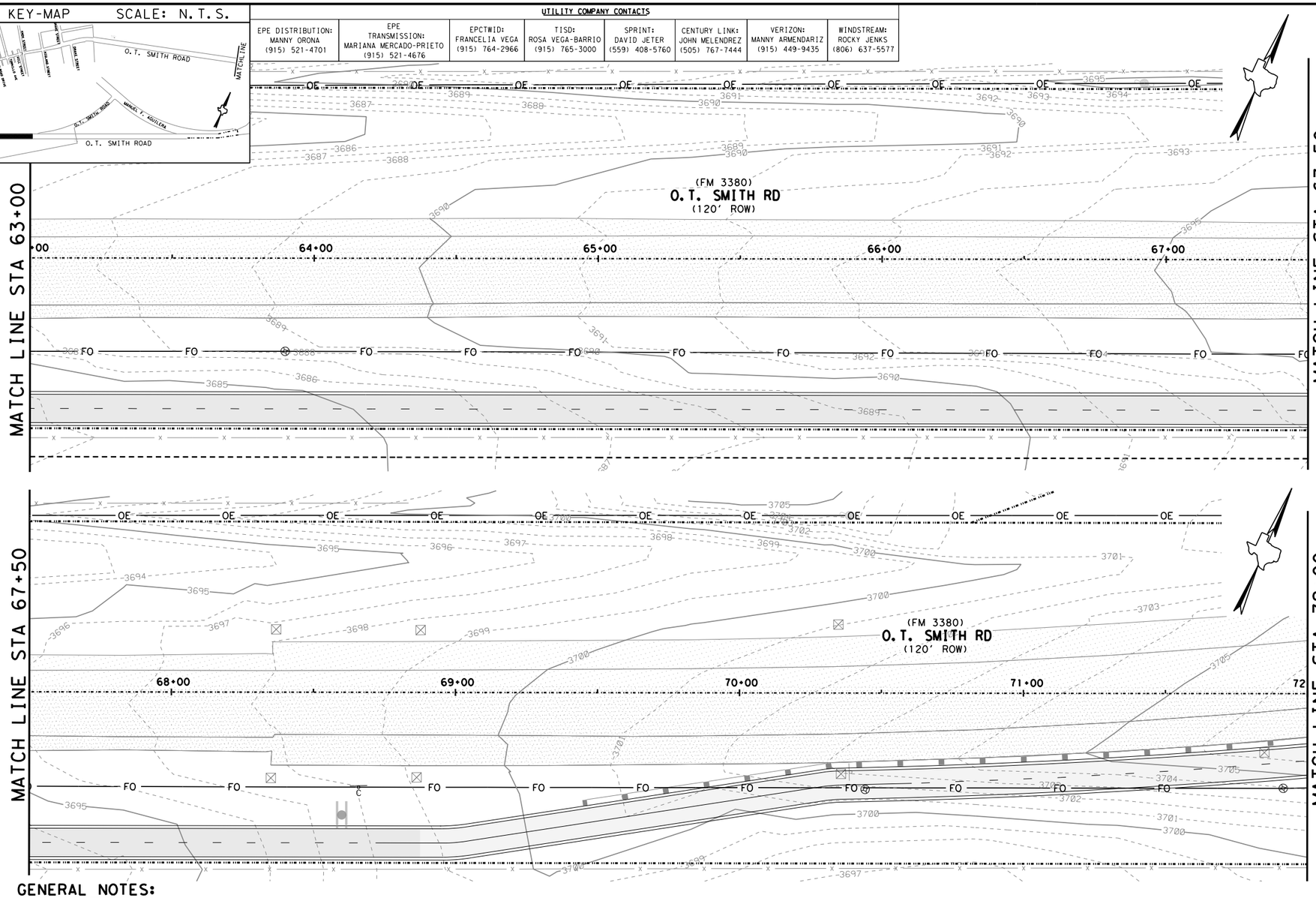

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FOR FIELD LOCATING EXISTING UTILITIES

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

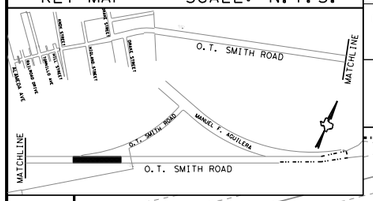
EXISTING UTILITIES

STA 63+00 TO STA 72+00

SHEET 8 OF 14

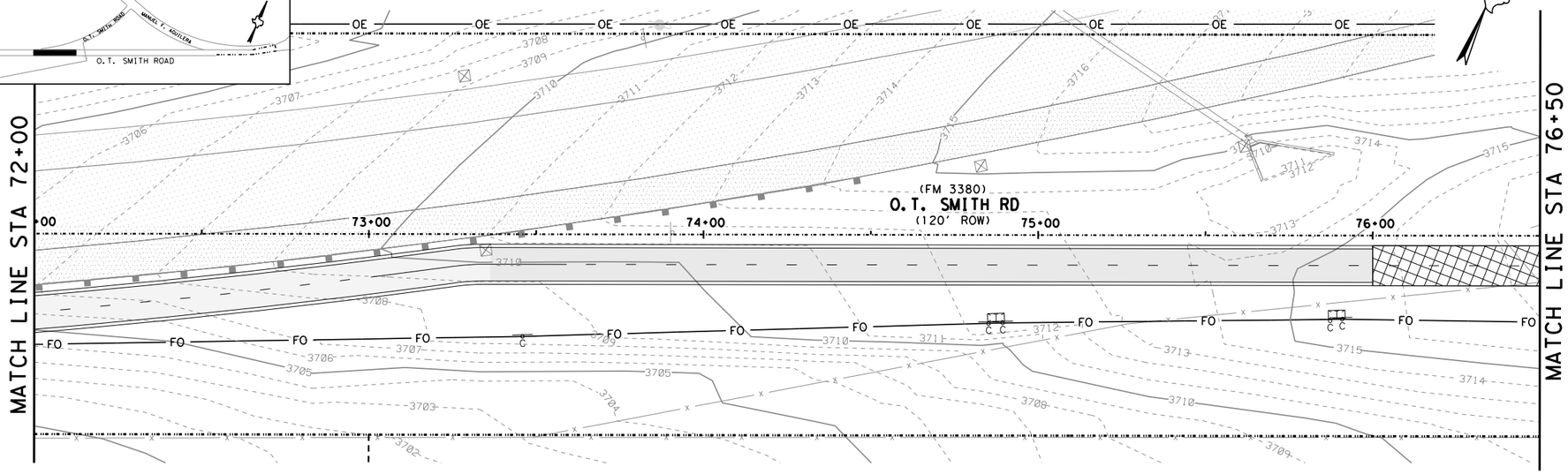
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		134
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

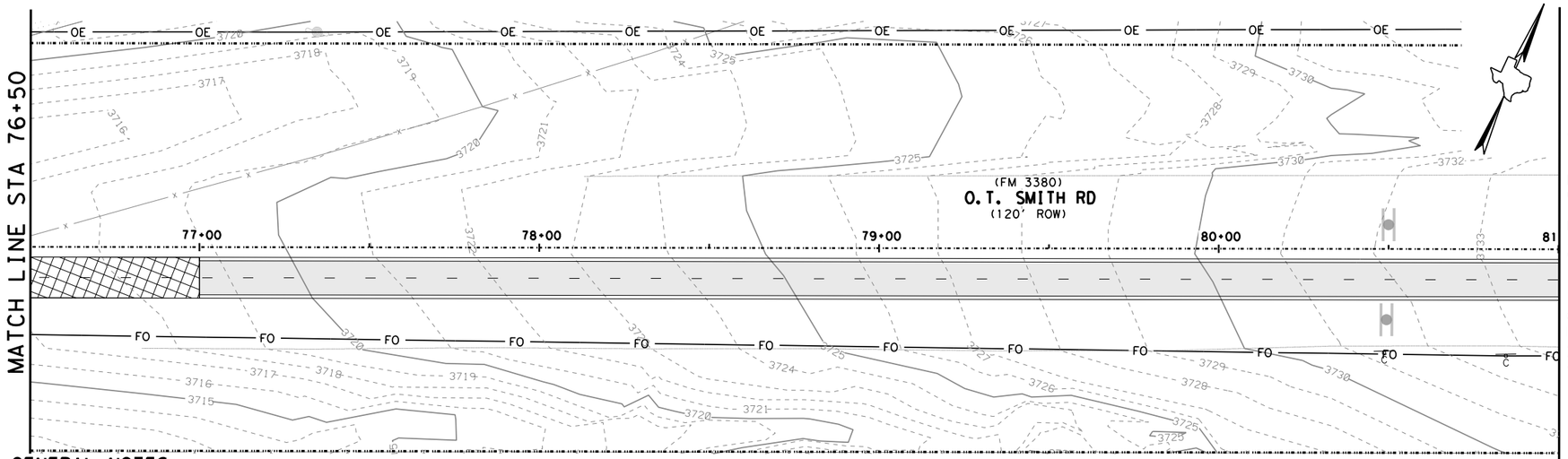
KEY-MAP SCALE: N.T.S.



UTILITY COMPANY CONTACTS

EPE DISTRIBUTION: MANNY ORONA (915) 521-4701	EPE TRANSMISSION: MARIANA MERCADO-PRIETO (915) 521-4676	EPCTWID: FRANCELIA VEGA (915) 764-2966	TISD: ROSA VEGA-BARRIO (915) 765-3000	SPRINT: DAVID JETER (559) 408-5760	CENTURY LINK: JOHN MELENDREZ (505) 767-7444	VERIZON: MANNY ARMENDARIZ (915) 449-9435	WINDSTREAM: ROCKY JENKS (806) 637-5577





LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- SANITARY SEWER LINE
- WATER LINE
- GAS LINE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND TELEPHONE LINE
- UNDERGROUND FIBER OPTIC CABLE LINE
- IRON FENCE/GUARD RAIL
- CHAIN LINK FENCE
- SINGLE RAILROAD TRACKS
- 1' CONTOUR INTERVAL
- 5' CONTOUR INTERVAL
- ASPHALT AREA
- CONCRETE AREA
- EXISTING BUILDING
- SANITARY SEWER MANHOLE
- WATER METER
- POWER/UTILITY POLE
- UNDERGROUND CABLE/TELEPHONE MARKER/RISER
- CANOPY
- SINGLE SIGNAL LIGHT POST
- LIGHT POLE/STANDARD
- PARKING/ROAD SIGN
- COMMUNICATIONS SIGN
- WATER/IRRIGATION VALVE
- FIRE HYDRANT
- MONITORING/TEST WELL
- BOLLARD
- ELECTRIC/ TRAFFIC SIGNAL BOX
- GUY ANCHOR
- FOUND COUNTY MONUMENT
- FOUND PROPERTY CORNER (REBAR)
- BLOCK NUMBER

0 20 40
SCALE: 1"=40'

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING LOCATIONS PRIOR TO CONSTRUCTION.
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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

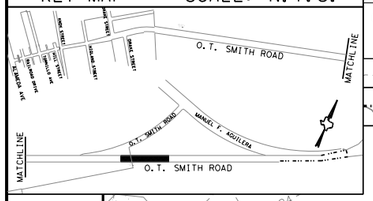
EXISTING UTILITIES

STA 72+00 TO STA 81+00

SHEET 9 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		135
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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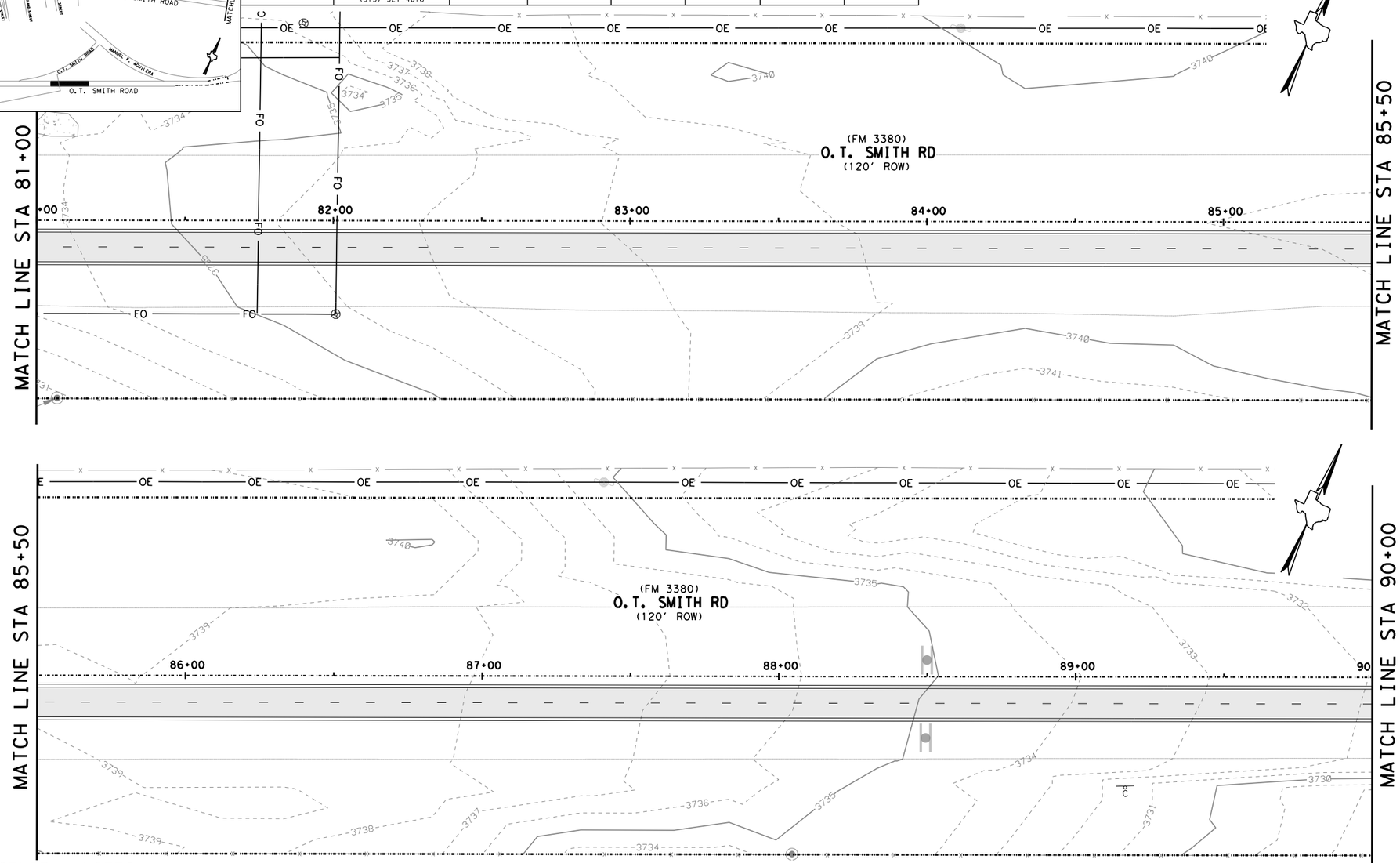

LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- SANITARY SEWER LINE
- WATER LINE
- GAS LINE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND TELEPHONE LINE
- UNDERGROUND FIBER OPTIC CABLE LINE
- IRON FENCE/GUARD RAIL
- CHAIN LINK FENCE
- SINGLE RAILROAD TRACKS
- 1' CONTOUR INTERVAL
- 5' CONTOUR INTERVAL
- ASPHALT AREA
- CONCRETE AREA
- EXISTING BUILDING
- SANITARY SEWER MANHOLE
- WATER METER
- POWER/UTILITY POLE
- UNDERGROUND CABLE/TELEPHONE MARKER/RISER
- CANOPY
- SINGLE SIGNAL LIGHT POST
- LIGHT POLE/STANDARD
- PARKING/ROAD SIGN
- COMMUNICATIONS SIGN
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- FIRE HYDRANT
- MONITORING/TEST WELL
- BOLLARD
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- GUY ANCHOR
- FOUND COUNTY MONUMENT
- FOUND PROPERTY CORNER (REBAR)
- BLOCK NUMBER

0 20 40
SCALE: 1"=40'

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Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

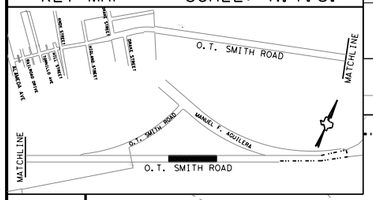
EXISTING UTILITIES

STA 81+00 TO STA 90+00

SHEET 10 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		136
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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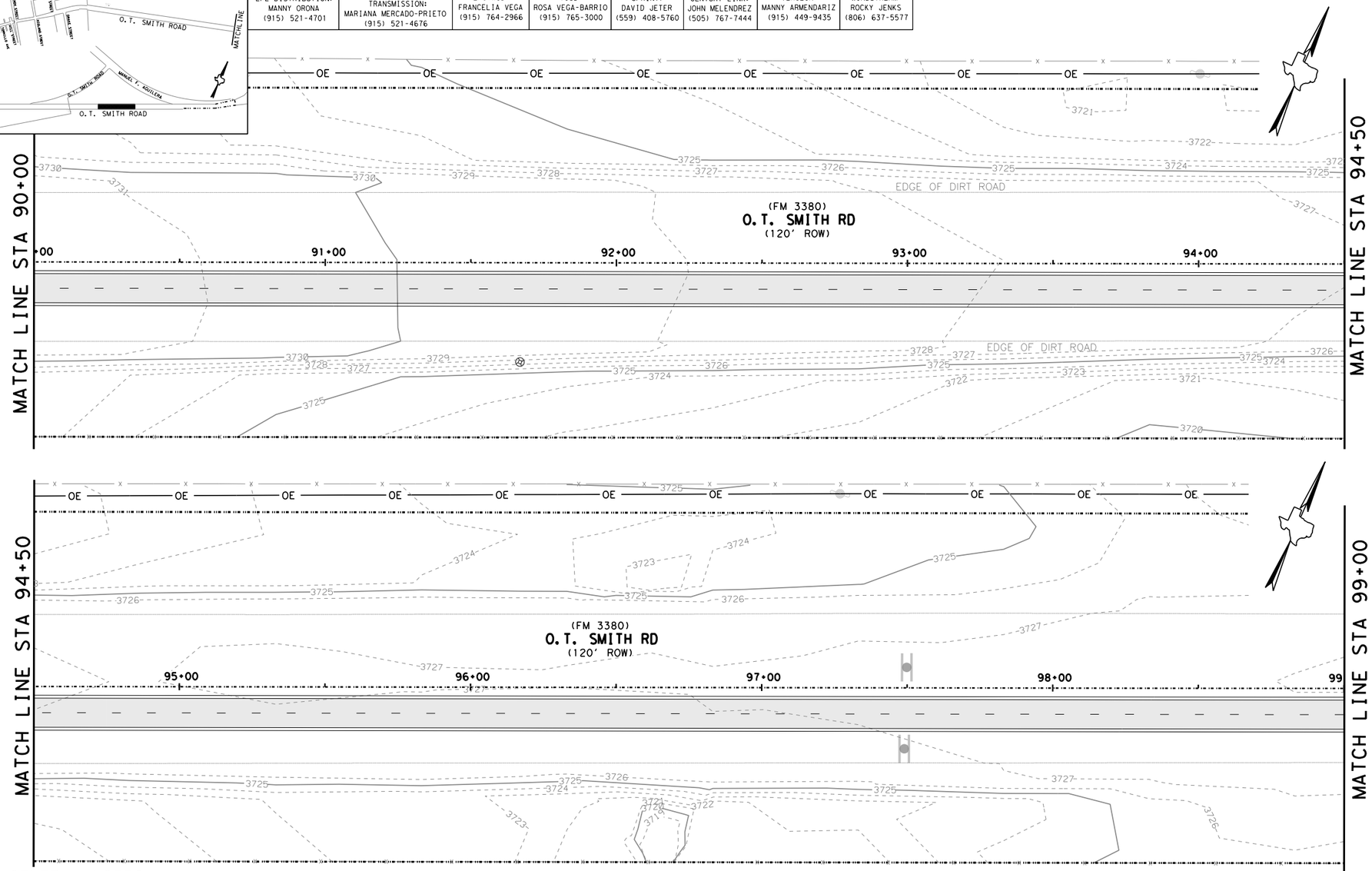

LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- WW — SANITARY SEWER LINE
- W — WATER LINE
- G — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- T — UNDERGROUND TELEPHONE LINE
- FO — UNDERGROUND FIBER OPTIC CABLE LINE
- IRON FENCE/GUARD RAIL
- CHAIN LINK FENCE
- SINGLE RAILROAD TRACKS
- 3901 — 1' CONTOUR INTERVAL
- 3900 — 5' CONTOUR INTERVAL
- ASPHALT AREA
- CONCRETE AREA
- EXISTING BUILDING
- S — SANITARY SEWER MANHOLE
- W — WATER METER
- POWER/UTILITY POLE
- UNDERGROUND CABLE/TELEPHONE MARKER/RISER
- CANOPY
- SINGLE SIGNAL LIGHT POST
- LIGHT POLE/STANDARD
- PARKING/ROAD SIGN
- COMMUNICATIONS SIGN
- WATER/IRRIGATION VALVE
- FIRE HYDRANT
- MONITORING/TEST WELL
- BOLLARD
- ELECTRIC/ TRAFFIC SIGNAL BOX
- GUY ANCHOR
- FOUND COUNTY MONUMENT
- FOUND PROPERTY CORNER (REBAR)
- 2 — BLOCK NUMBER

0 20 40
SCALE: 1"=40'

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CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

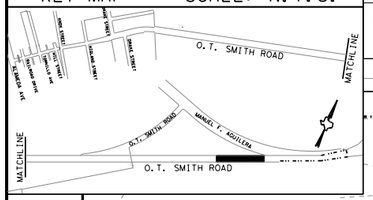
EXISTING UTILITIES

STA 90+00 TO STA 99+00

SHEET 11 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		137
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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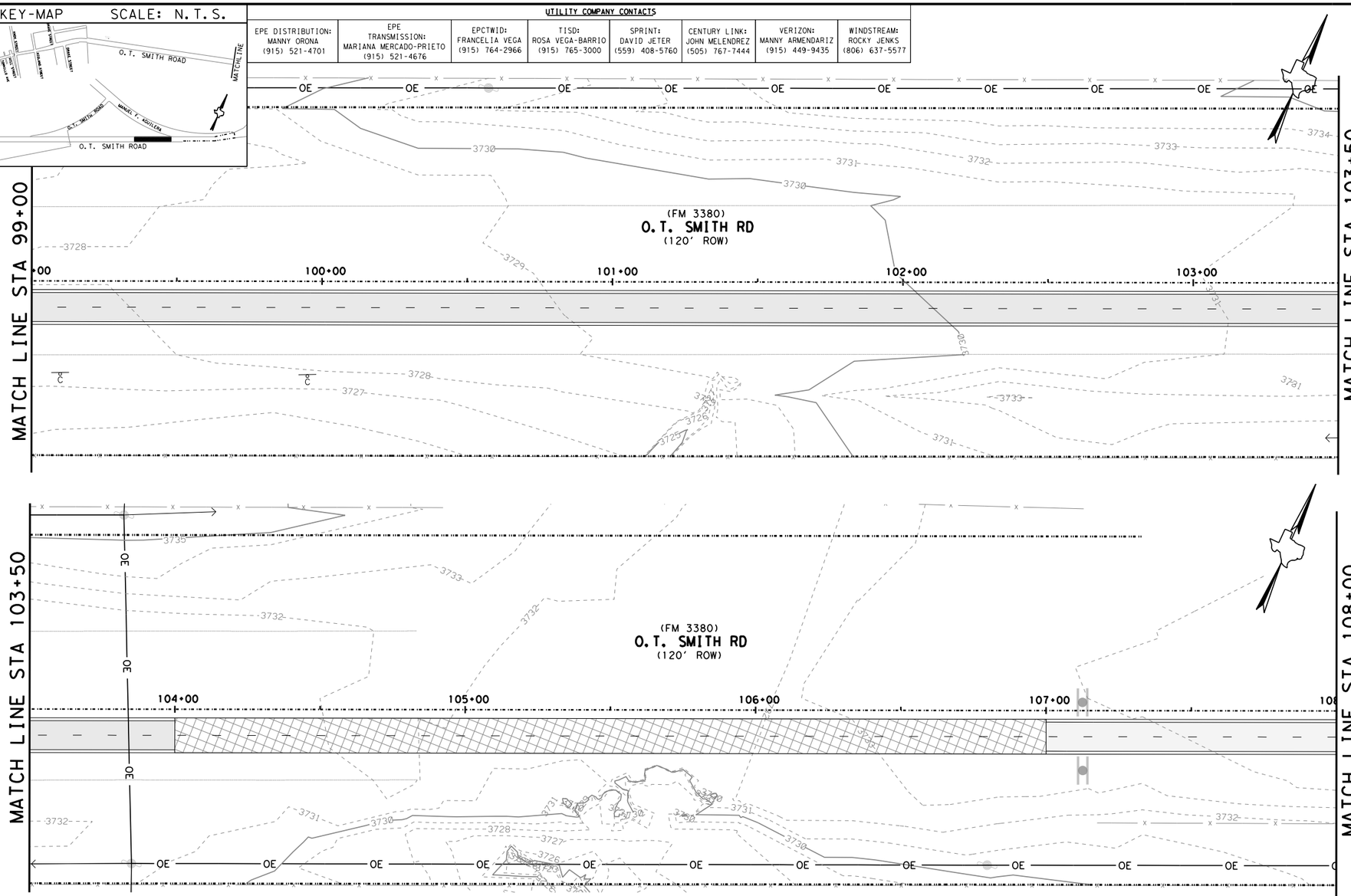

LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- SANITARY SEWER LINE
- WATER LINE
- GAS LINE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
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- SINGLE RAILROAD TRACKS
- 1' CONTOUR INTERVAL
- 5' CONTOUR INTERVAL
- ASPHALT AREA
- CONCRETE AREA
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- ELECTRIC/ TRAFFIC SIGNAL BOX
- GUY ANCHOR
- FOUND COUNTY MONUMENT
- FOUND PROPERTY CORNER (REBAR)
- BLOCK NUMBER

0 20 40
SCALE: 1"=40'

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10. FOR WORK THAT TAKES PLACE WITHIN 36" OF LOCATION OF FIBER OPTIC LINES, IT IS RECOMMENED THE CONTRACTOR HAND DIG INSTEAD OF USING MACHINERY FOR LOCATION OF LINE PRIOR TO CONSTRUCTION
11. AT LOCATIONS WHERE THE PATH CROSSES FIBER OPTIC LINES, CONTRACTOR SHOULD EXCAVATE AND LOCATE LINES BEFORE PERFORMING ANY WORK AT THOSE LOCATIONS.

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

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

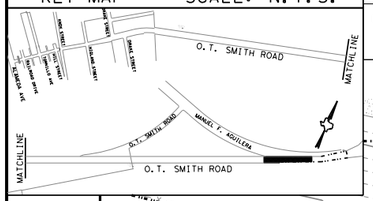
EXISTING UTILITIES

STA 99+00 TO STA 108+00

SHEET 12 OF 14

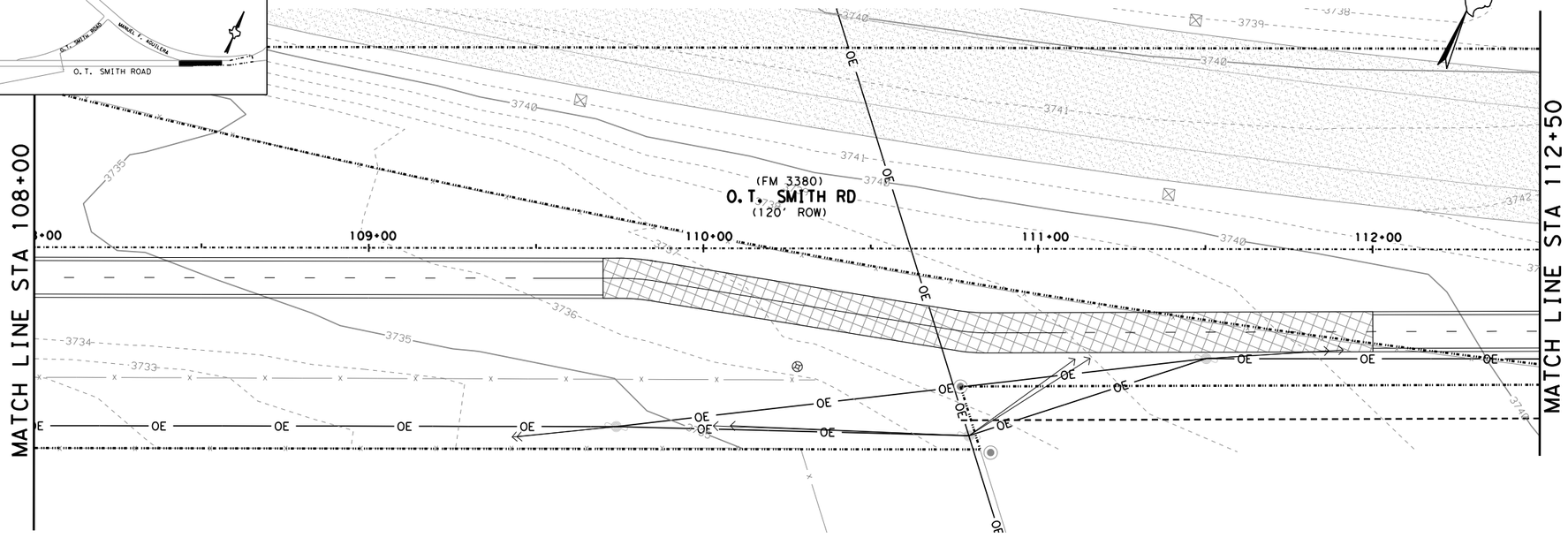
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		138
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

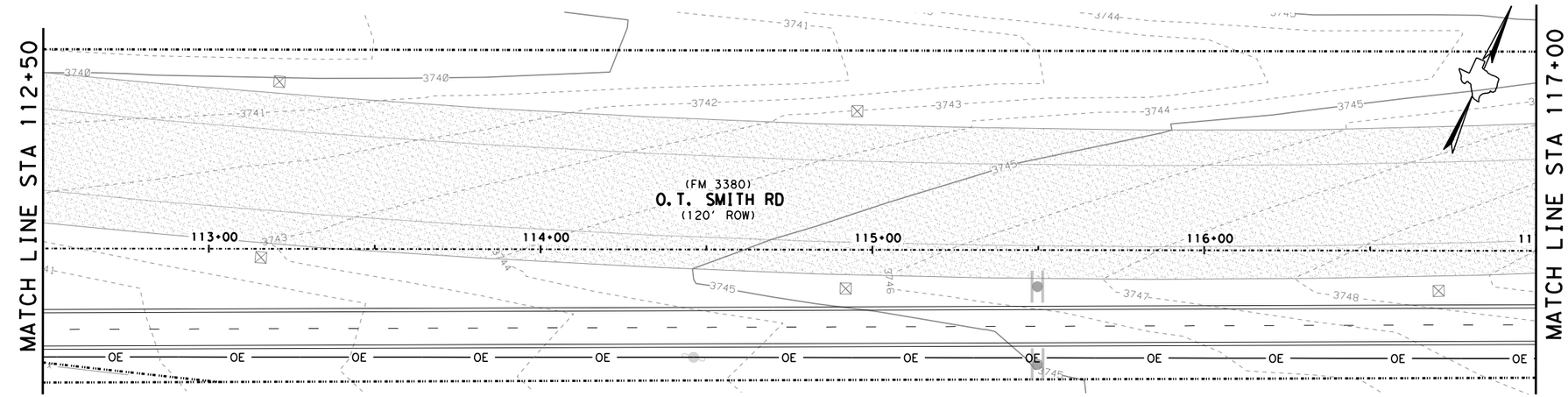
KEY-MAP SCALE: N.T.S.



UTILITY COMPANY CONTACTS

EPE DISTRIBUTION: MANNY ORONA (915) 521-4701	EPE TRANSMISSION: MARIANA MERCADO-PRIETO (915) 521-4676	EPCTWID: FRANCELIA VEGA (915) 764-2966	TISD: ROSA VEGA-BARRIO (915) 765-3000	SPRINT: DAVID JETER (559) 408-5760	CENTURY LINK: JOHN MELENDREZ (505) 767-7444	VERIZON: MANNY ARMENDARIZ (915) 449-9435	WINDSTREAM: ROCKY JENKS (806) 637-5577





LEGEND

- TRACT/LOT LINE
- RIGHT-OF-WAY
- CENTERLINE OF RIGHT-OF-WAY
- EASEMENT LINE
- WW — SANITARY SEWER LINE
- W — WATER LINE
- G — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- T — UNDERGROUND TELEPHONE LINE
- FO — UNDERGROUND FIBER OPTIC CABLE LINE
- IRON FENCE/GUARD RAIL
- CHAIN LINK FENCE
- SINGLE RAILROAD TRACKS
- 3901 — 1' CONTOUR INTERVAL
- 3900 — 5' CONTOUR INTERVAL
- ASPHALT AREA
- CONCRETE AREA
- EXISTING BUILDING
- SANITARY SEWER MANHOLE
- WATER METER
- POWER/UTILITY POLE
- UNDERGROUND CABLE/TELEPHONE MARKER/RISER
- CANOPY
- SINGLE SIGNAL LIGHT POST
- LIGHT POLE/STANDARD
- PARKING/ROAD SIGN
- COMMUNICATIONS SIGN
- WATER/IRRIGATION VALVE
- FIRE HYDRANT
- MONITORING/TEST WELL
- BOLLARD
- ELECTRIC/ TRAFFIC SIGNAL BOX
- GUY ANCHOR
- FOUND COUNTY MONUMENT
- FOUND PROPERTY CORNER (REBAR)
- (2) — BLOCK NUMBER

0 20 40
SCALE: 1"=40'

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 DATE 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.
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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

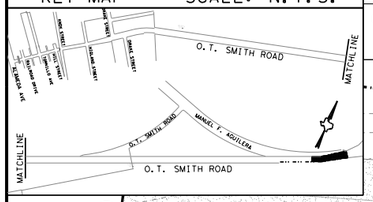
EXISTING UTILITIES

STA 108+00 TO STA 117+00

SHEET 13 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		139
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

KEY-MAP SCALE: N.T.S.



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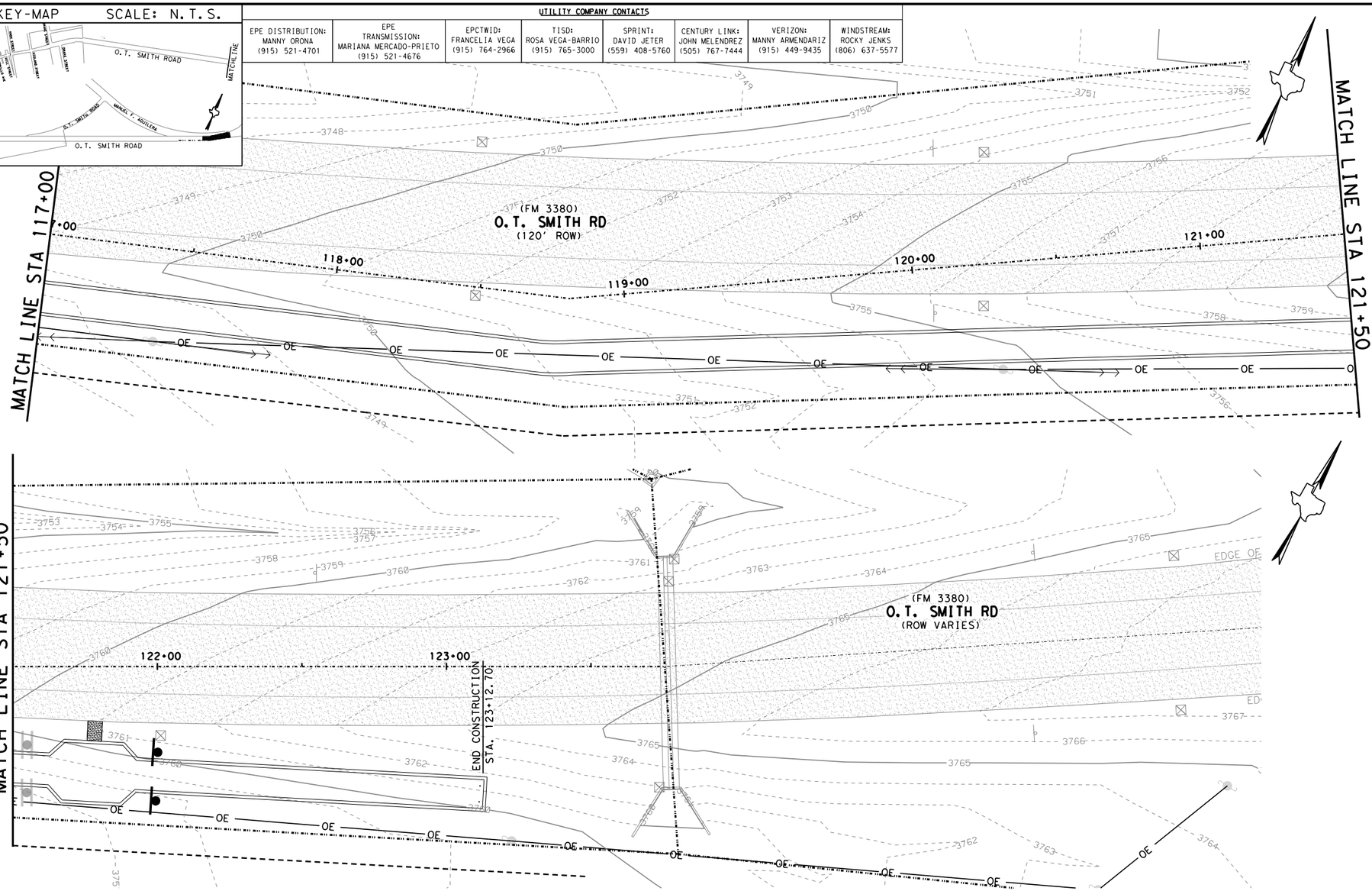

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WARNING!
BEFORE YOU DIG
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FOR FIELD LOCATING EXISTING UTILITIES

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

EXISTING UTILITIES

STA 117+00 TO STA 123+12.70

SHEET 14 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		140
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

ILLUMINATION GENERAL NOTES:

1. THE CONTRACTOR SHALL USE THE FOLLOWING OR APPROVED EQUIVALENT FIXTURE:
   I. FIRST LIGHT SOLAR LIGHTING SOLUTIONS: FLT-IPL-SERIES
2. THE CONTRACTOR MUST OBTAIN APPROVAL BY THE ENGINEER BEFORE PURCHASING MATERIALS AND BEGINNING WORK.
3. SYMBOLS INDICATING ILLUMINATION ASSEMBLIES ARE EXAGGERATED IN SIZE FOR CLARITY.
4. THE LOCATIONS OF LIGHT FIXTURES CAN BE MARGINALLY ADJUSTED BY THE CONTRACTOR TO FIT FIELD CONDITIONS. STATION AND OFFSET OF ILLUMINATION ASSEMBLIES, ILLUMINATION ASSEMBLIES, PROVIDED IN PLANS, IS FOR GUIDANCE ONLY. ALL ADJUSTMENTS MUST BE APPROVED BY THE ENGINEER.
5. GROUND ALL POLE BASES AND LUMINAIRE HOUSINGS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
6. ALL EXISTING LIGHT POLES, GROUND BOXES, CONDUIT AND CONDUCTORS TO REMAIN AS IS UNLESS NOTED ON THE PLANS.
7. ROW SHOULD BE FIELD VERIFIED BEFORE CONSTRUCTION.
8. ALL POLES SHALL HAVE A GROSS HEIGHT OF 10'. THE CONTRACTOR SHALL GET APPROVAL FROM COEP BEFORE PURCHASING ANY EQUIPMENT.
9. THE CONTRACTOR SHALL CONFIRM ALL UTILITY DEPTHS, AND LOCATIONS PRIOR TO EXCAVATION.
10. POLE LOCATIONS ARE APPROXIMATE. FINAL LOCATION OF POLES SHALL BE APPROVED BY THE ENGINEER.
11. LED SHALL BE DARK SKY COMPLIANT.
12. THE CONTRACTOR SHALL CONFORM TO ALL EL PASO ELECTRIC REGULATIONS PRIOR TO INSTALLATION OF ANY LUMINAIRE ARM AND/OR LUMINAIRES.
13. REFER TO "PEDESTRIAN ILLUMINATION ASSEMBLY DETAILS" SHEET 147 FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. ANY UTILITIES ON THESE PLANS ARE SHOWN IN APPROXIMATE LOCATIONS, ALL EXISTING UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL CONTACT PUBLIC AND PRIVATE UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO ANY DRILLING, BORING, TRENCHING, OR EXCAVATING. TXDOT FACILITIES UNDERGROUND INFRASTRUCTURE INCLUDING EXISTING IRRIGATION, STORM DRAIN, ILLUMINATION, DUCT BANK AND ASSOCIATED CONDUIT RUNS WILL NOT BE IDENTIFIED BY 811. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.

STATE OF TEXAS
LEONARDO LEDESMA
103621
LICENSED PROFESSIONAL ENGINEER
5/23/2019

CONSOR
F-12040

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH
ILLUMINATION PLAN
GENERAL NOTES

SHEET 1 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
		141

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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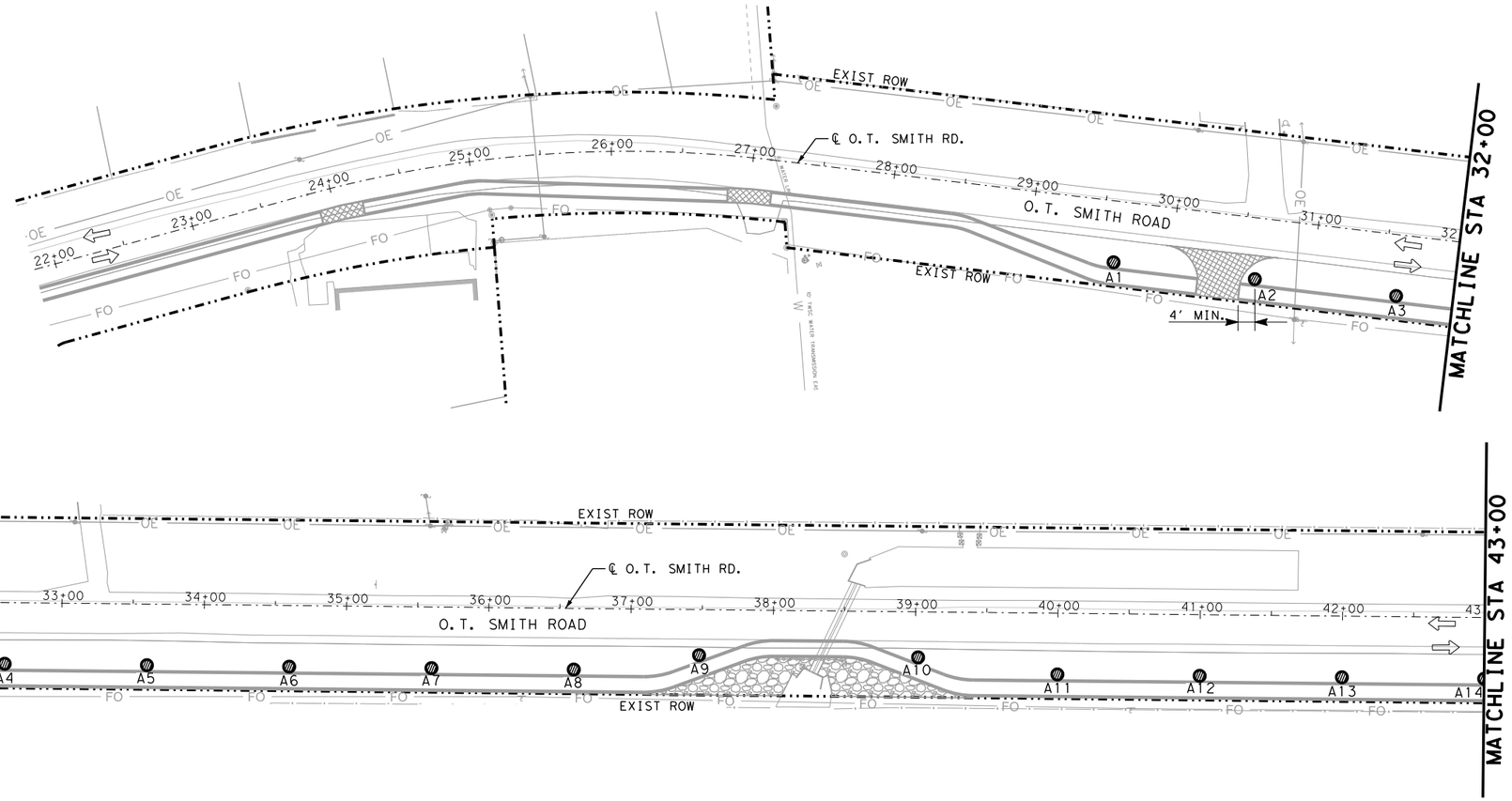

LEGEND

- EXIST RDWY ILL ASSEM
- PROP PED IL (SOLAR LED)
- TRAFFIC FLOW
- EXIST RIGHT OF WAY
- POLE ID: XX (POLE NUMBER / POLE LETTER)

0 50′ 100′

SCALE: 1" = 100′

ILLUMINATION QUANTITIES			
ITEM	DESCRIPTION	UNIT	QTY
0110 6003	EXCAVATION (SPECIAL)	CY	2
0416 6002	DRILL SHAFT (24 IN)	LF	84
ELP2 6001	PED ILLUMINATION ASSEMBLY (10′) (SOLAR LED)	EA	14

PEDESTRIAN ILLUMINATION ASSEMBLY SUMMARY						
LUMINAIRE POLE NUMBER	DESCRIPTION	BASELINE	STATION	OFFSET	X	Y
A 1	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	29+60	43.0′ RT	504835.6600	10537793.7143
A 2	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	30+60	43.0′ RT	504927.3265	10537833.6801
A 3	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	31+60	43.0′ RT	505018.9930	10537873.6458
A 4	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	32+60	43.0′ RT	505110.6594	10537913.6115
A 5	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	33+60	43.0′ RT	505202.3259	10537953.5772
A 6	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	34+60	43.0′ RT	505293.9924	10537993.5429
A 7	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	35+60	43.0′ RT	505385.6588	10538033.5087
A 8	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	36+60	43.0′ RT	505477.3253	10538073.4744
A 9	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	37+48	32.0′ RT	505553.5573	10538118.7109
A 10	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	39+02	32.0′ RT	505694.6804	10538180.2392
A 11	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	40+00	43.0′ RT	505788.9097	10538209.3223
A 12	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	41+00	43.0′ RT	505880.5762	10538249.2880
A 13	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	42+00	43.0′ RT	505972.2427	10538289.2537
A 14	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	43+00	43.0′ RT	506063.9091	10538329.2194

STATE OF TEXAS
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5/23/2019

CONSOR
F-12040

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH
ILLUMINATION PLAN
STA 22+00 TO STA 43+00

SHEET 2 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
		142

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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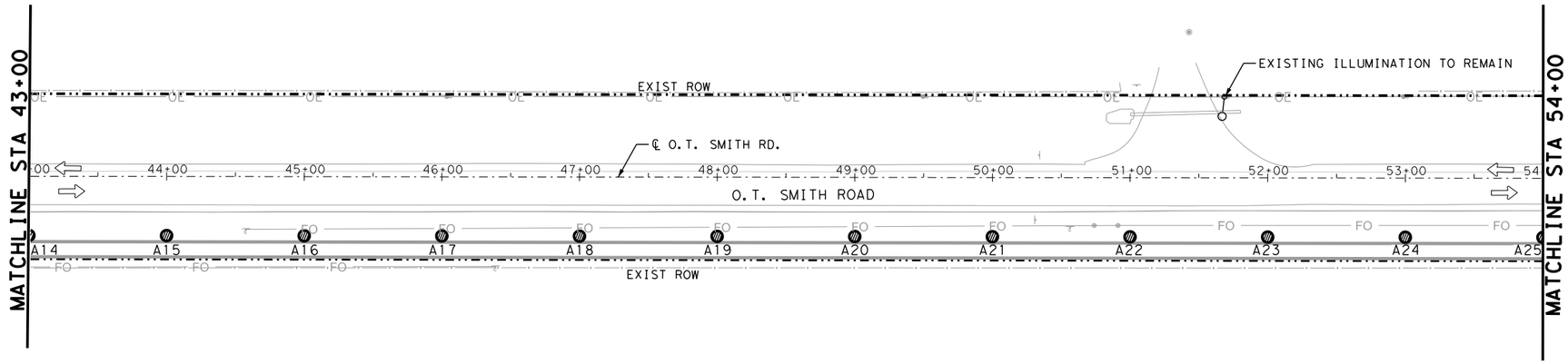

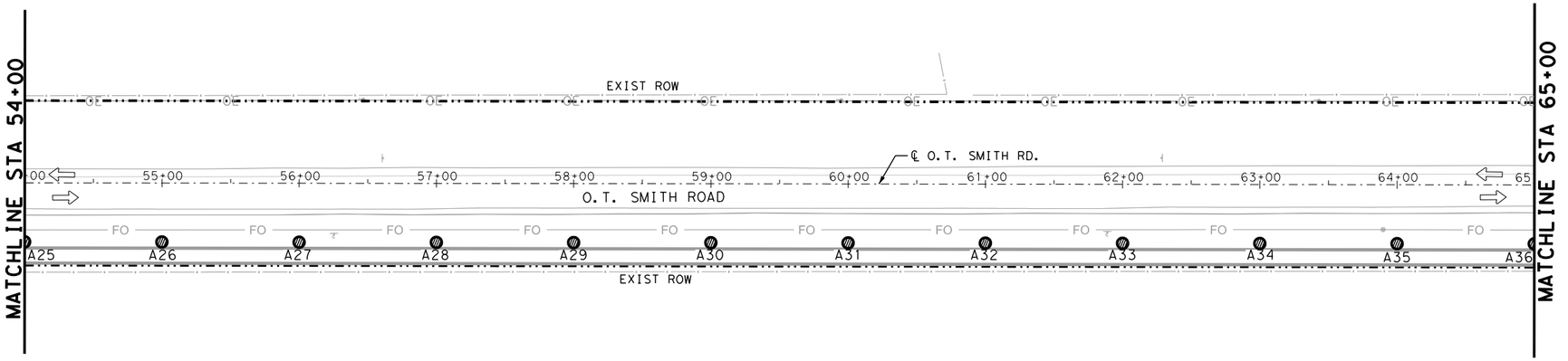

LEGEND

- EXIST RDWY ILL ASSEM
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- POLE ID: XX (POLE NUMBER / POLE LETTER)

0 50′ 100′

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ILLUMINATION QUANTITIES			
ITEM	DESCRIPTION	UNIT	QTY
0110 6003	EXCAVATION (SPECIAL)	CY	3
0416 6002	DRILL SHAFT (24 IN)	LF	132
ELP2 6001	PED ILLUMINATION ASSEMBLY (10′) (SOLAR LED)	EA	22

PEDESTRIAN ILLUMINATION ASSEMBLY SUMMARY						
LUMINAIRE POLE NUMBER	DESCRIPTION	BASELINE	STATION	OFFSET	X	Y
A 15	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	44+00	43.0′ RT	506155.5756	10538369.1852
A 16	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	45+00	43.0′ RT	506247.2421	10538409.1509
A 17	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	46+00	43.0′ RT	506338.9085	10538449.1166
A 18	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	47+00	43.0′ RT	506430.5750	10538489.0823
A 19	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	48+00	43.0′ RT	506522.2415	10538529.0480
A 20	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	49+00	43.0′ RT	506613.9079	10538569.0138
A 21	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	50+00	43.0′ RT	506705.5744	10538608.9795
A 22	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	51+00	43.0′ RT	506797.2409	10538648.9452
A 23	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	52+00	43.0′ RT	506888.9073	10538688.9109
A 24	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	53+00	43.0′ RT	506980.5738	10538728.8766
A 25	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	54+00	43.0′ RT	507072.2403	10538768.8424
A 26	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	55+00	43.0′ RT	507163.9067	10538808.8081
A 27	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	56+00	43.0′ RT	507255.5732	10538848.7738
A 28	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	57+00	43.0′ RT	507347.2397	10538888.7395
A 29	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	58+00	43.0′ RT	507438.9061	10538928.7053
A 30	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	59+00	43.0′ RT	507530.5726	10538968.6710
A 31	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	60+00	43.0′ RT	507622.2391	10539008.6367
A 32	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	61+00	43.0′ RT	507713.9055	10539048.6024
A 33	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	62+00	43.0′ RT	507805.5720	10539088.5681
A 34	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	63+00	43.0′ RT	507897.2385	10539128.5339
A 35	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	64+00	43.0′ RT	507988.9049	10539168.4996
A 36	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	65+00	43.0′ RT	508080.5714	10539208.4653

STATE OF TEXAS
LEONARDO LEDESMA
103621
LICENSED PROFESSIONAL ENGINEER
5/23/2019

CONSOR
F-12040

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH
ILLUMINATION PLAN
STA 43+00 TO STA 65+00

SHEET 3 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
		143

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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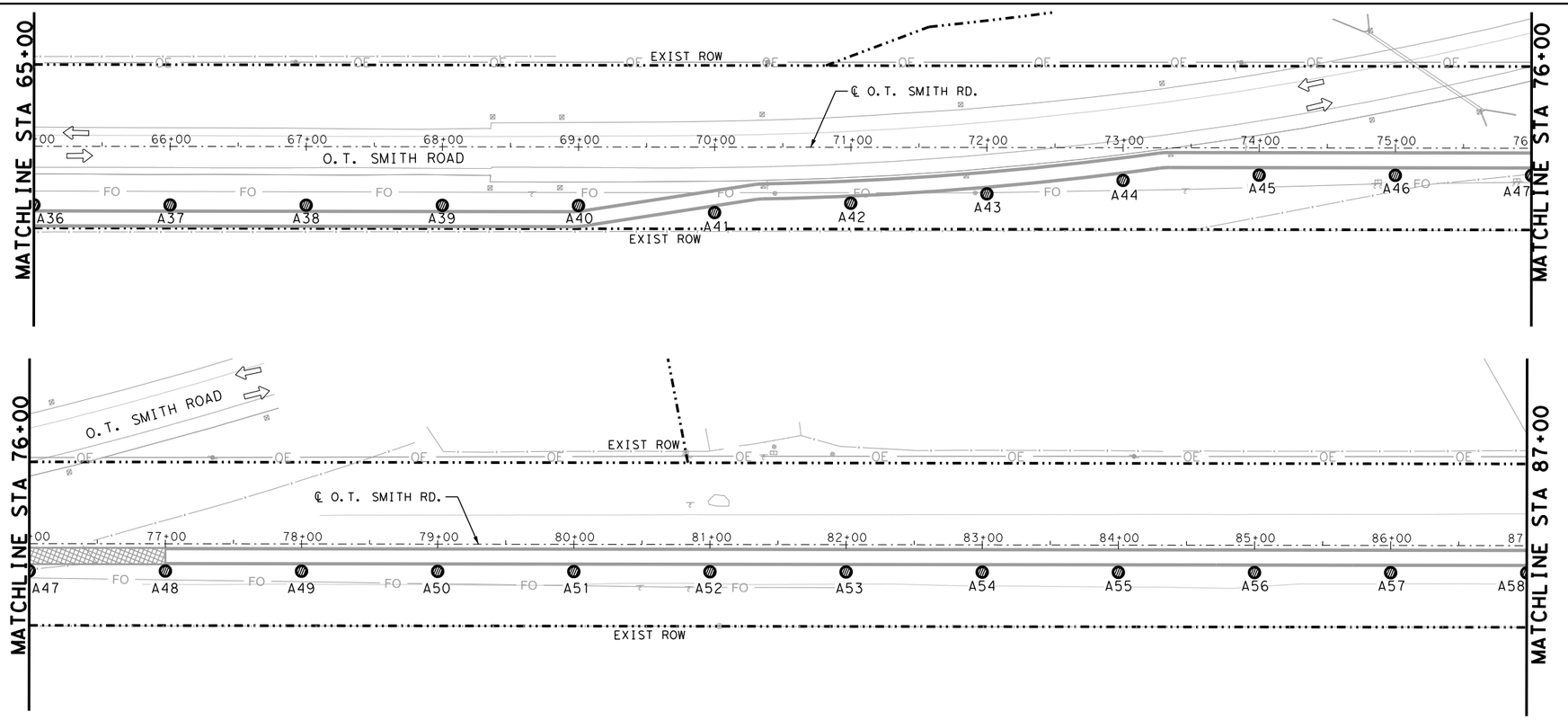

LEGEND

- EXIST RDWY ILL ASSEM
- PROP PED IL (SOLAR LED)
- TRAFFIC FLOW
- EXIST RIGHT OF WAY
- POLE ID: XX
  - POLE NUMBER
  - POLE LETTER

0 50′ 100′

SCALE: 1" = 100′

ILLUMINATION QUANTITIES			
ITEM	DESCRIPTION	UNIT	QTY
0110 6003	EXCAVATION (SPECIAL)	CY	3
0416 6002	DRILL SHAFT (24 IN)	LF	132
ELP2 6001	PED ILLUMINATION ASSEMBLY (10′) (SOLAR LED)	EA	22

PEDESTRIAN ILLUMINATION ASSEMBLY SUMMARY						
LUMINAIRE POLE NUMBER	DESCRIPTION	BASELINE	STATION	OFFSET	X	Y
A 37	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	66+00	43.0′ RT	508172.2379	10539248.4310
A 38	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	67+00	43.0′ RT	508263.9043	10539288.3967
A 39	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	68+00	43.0′ RT	508355.5708	10539328.3625
A 40	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	69+00	43.0′ RT	508447.2373	10539368.3282
A 41	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	70+00	43.0′ RT	508540.9020	10539403.7106
A 42	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	71+00	41.0′ RT	508629.7709	10539450.0930
A 43	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	72+00	34.0′ RT	508718.6397	10539496.4753
A 44	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	73+00	24.0′ RT	508806.3096	10539545.6077
A 45	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	74+00	20.0′ RT	508896.3775	10539589.2401
A 46	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	75+00	20.0′ RT	508988.0439	10539629.2058
A 47	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	76+00	20.0′ RT	509079.7104	10539669.1715
A 48	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	77+00	20.0′ RT	509171.3769	10539709.1372
A 49	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	78+00	20.0′ RT	509263.0433	10539749.1030
A 50	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	79+00	20.0′ RT	509354.7098	10539789.0687
A 51	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	80+00	20.0′ RT	509446.3763	10539829.0344
A 52	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	81+00	20.0′ RT	509538.0427	10539869.0001
A 53	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	82+00	20.0′ RT	509629.7092	10539908.9658
A 54	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	83+00	20.0′ RT	509721.3757	10539948.9316
A 55	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	84+00	20.0′ RT	509813.0421	10539988.8973
A 56	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	85+00	20.0′ RT	509904.7086	10540028.8630
A 57	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	86+00	20.0′ RT	509996.3751	10540068.8287
A 58	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	87+00	20.0′ RT	510088.0415	10540108.7944

STATE OF TEXAS
LEONARDO LEDESMA
103621
LICENSED
PROFESSIONAL ENGINEER
5/23/2019

CONSOR
F-12040

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH
ILLUMINATION PLAN
STA 65+00 TO STA 87+00

SHEET 4 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
		144

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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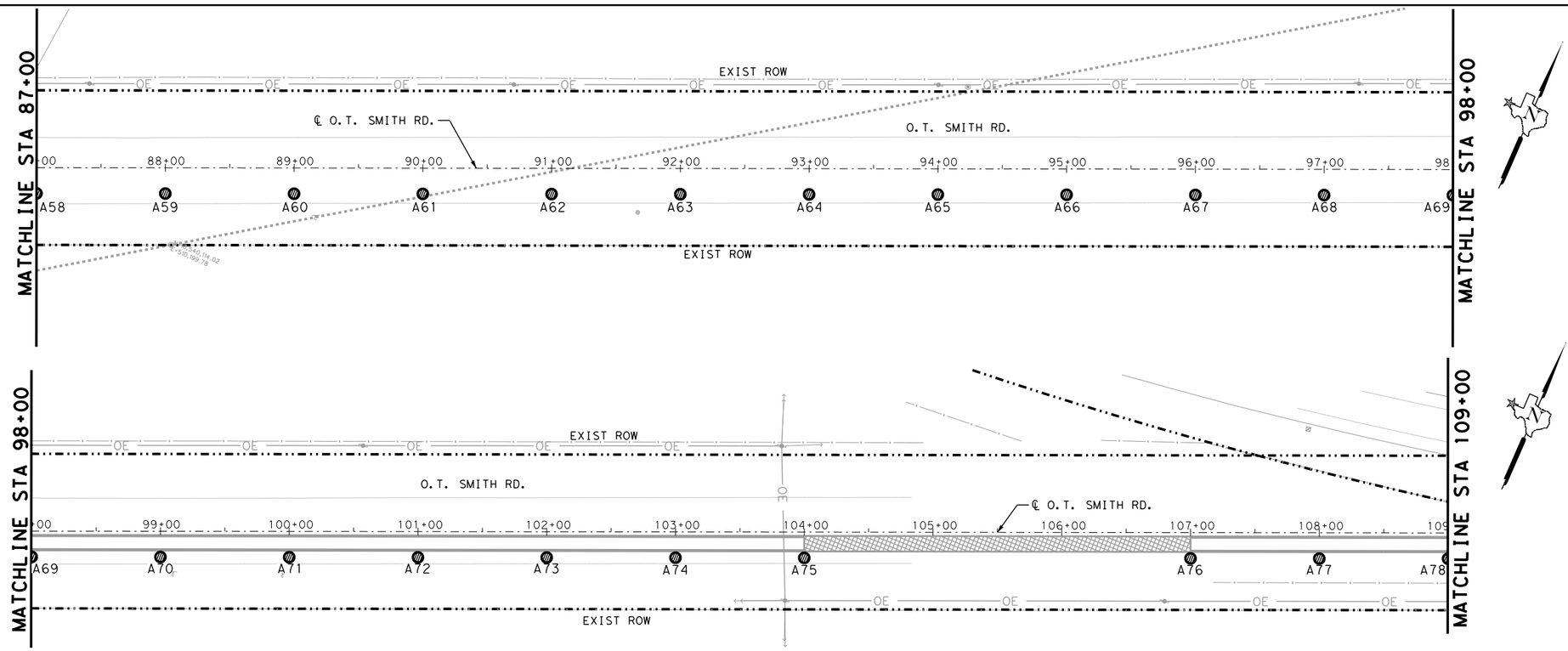

LEGEND

- EXIST RDWY ILL ASSEM
- PROP PED IL (SOLAR LED)
- TRAFFIC FLOW
- EXIST RIGHT OF WAY

POLE ID:
XX
- POLE NUMBER
- POLE LETTER

ILLUMINATION QUANTITIES			
ITEM	DESCRIPTION	UNIT	QTY
0110 6003	EXCAVATION (SPECIAL)	CY	2
0416 6002	DRILL SHAFT (24 IN)	LF	120
ELP2 6001	PED ILLUMINATION ASSEMBLY (10') (SOLAR LED)	EA	20

PEDESTRIAN ILLUMINATION ASSEMBLY SUMMARY						
LUMINAIRE POLE NUMBER	DESCRIPTION	BASELINE	STATION	OFFSET	X	Y
A 59	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	88+00	20.0' RT	510179.7080	10540148.7602
A 60	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	89+00	20.0' RT	510271.3745	10540188.7259
A 61	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	90+00	20.0' RT	510363.0410	10540228.6916
A 62	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	91+00	20.0' RT	510454.7074	10540268.6573
A 63	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	92+00	20.0' RT	510546.3739	10540308.6230
A 64	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	93+00	20.0' RT	510638.0404	10540348.5888
A 65	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	94+00	20.0' RT	510729.7068	10540388.5545
A 66	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	95+00	20.0' RT	510821.3733	10540428.5202
A 67	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	96+00	20.0' RT	510913.0398	10540468.4859
A 68	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	97+00	20.0' RT	511004.7062	10540508.4517
A 69	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	98+00	20.0' RT	511096.3727	10540548.4174
A 70	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	99+00	20.0' RT	511188.0392	10540588.3831
A 71	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	100+00	20.0' RT	511279.7056	10540628.3488
A 72	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	101+00	20.0' RT	511371.3721	10540668.3145
A 73	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	102+00	20.0' RT	511463.0386	10540708.2803
A 74	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	103+00	20.0' RT	511554.7050	10540748.2460
A 75	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	104+00	20.0' RT	511646.3715	10540788.2117
A 76	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	107+00	20.0' RT	511921.3709	10540908.1089
A 77	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	108+00	20.0' RT	512013.0374	10540948.0746
A 78	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	109+00	20.0' RT	512104.7038	10540988.0403

0 50' 100'

SCALE: 1" = 100'

5/23/2019

CONSOR
F-12040

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH
ILLUMINATION PLAN
STA 87+00 TO STA109+00

SHEET 5 OF 6

FED.RD. DIV.NO:	FEDERAL AID PROJECT NO.	SHEET NO.
		145

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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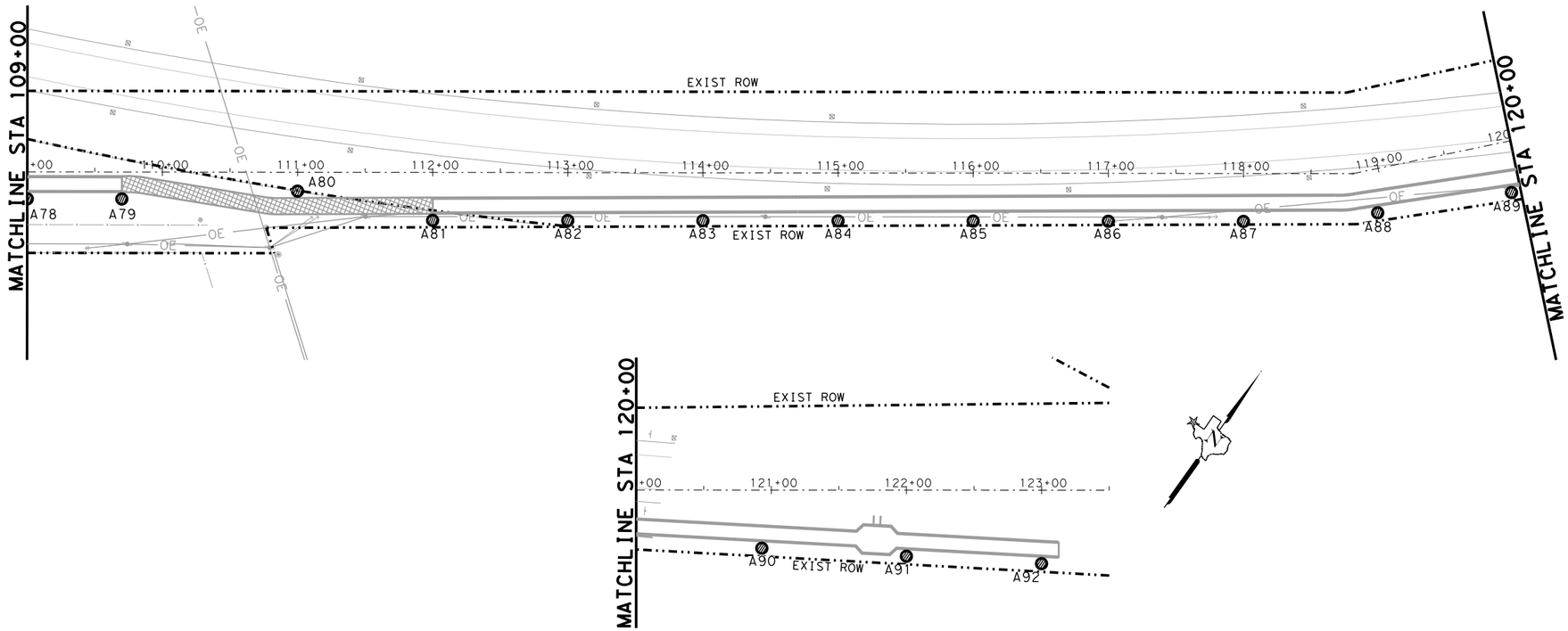


LEGEND

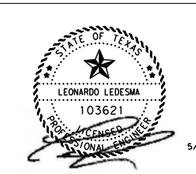
- EXIST RDWY ILL ASSEM
- PROP PED IL (SOLAR LED)
- TRAFFIC FLOW
- EXIST RIGHT OF WAY
- POLE ID: XX (POLE NUMBER / POLE LETTER)

0 50′ 100′

SCALE: 1" = 100′

PEDESTRIAN ILLUMINATION ASSEMBLY SUMMARY						
LUMINAIRE POLE NUMBER	DESCRIPTION	BASELINE	STATION	OFFSET	X	Y
A 79	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	109+70	20.0′ RT	512168.8703	10541016.0163
A 80	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	111+00	35.5′ RT	512285.6388	10541073.4717
A 81	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	112+00	35.5′ RT	512385.8979	10541093.7292
A 82	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	113+00	35.5′ RT	512477.5644	512477.5644
A 83	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	114+00	35.5′ RT	512569.2308	10541173.6606
A 84	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	115+00	35.5′ RT	512660.8973	10541213.6263
A 85	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	116+00	35.5′ RT	512752.5638	10541253.5920
A 86	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	117+00	35.5′ RT	512844.2302	10541293.5578
A 87	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	118+00	35.5′ RT	512935.8967	10541333.5235
A 88	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	118+93	32.1′ RT	513024.3488	10541379.2072
A 89	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	119+93	37.6′ RT	513109.0345	10541432.6705
A 90	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	120+93	43.0′ RT	513193.7202	10541486.1338
A 91	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	122+00	48.9′ RT	513284.3339	10541543.3396
A 92	PROP PEDESTRIAN ILLUMINATION	O.T. SMITH RD	123+00	54.4′ RT	513369.0197	10541596.8029

ILLUMINATION QUANTITIES			
ITEM	DESCRIPTION	UNIT	QTY
0110 6003	EXCAVATION (SPECIAL)	CY	2
0416 6002	DRILL SHAFT (24 IN)	LF	84
ELP2 6001	PED ILLUMINATION ASSEMBLY (10′) (SOLAR LED)	EA	14



5/23/2019

CONSOR
F-12040

CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED USE PATH
ILLUMINATION PLAN
STA 109+00 TO END

SHEET 6 OF 6

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
		146

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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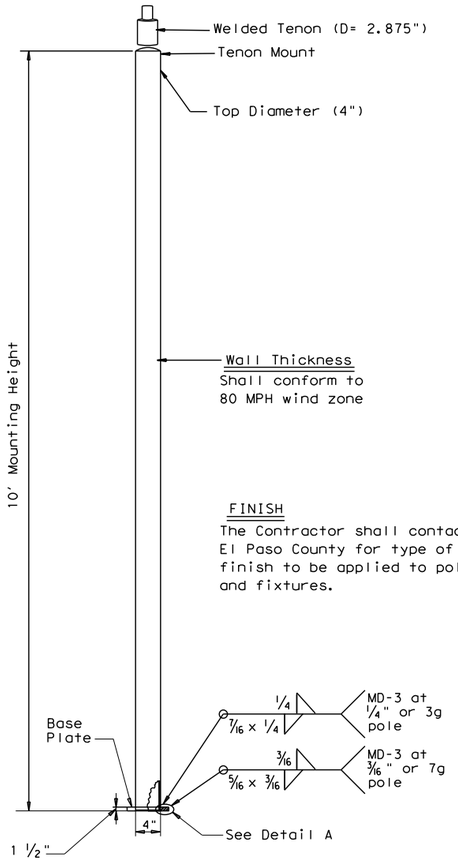
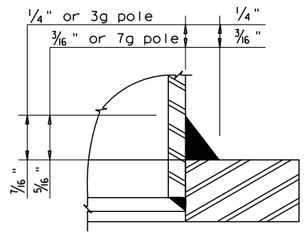


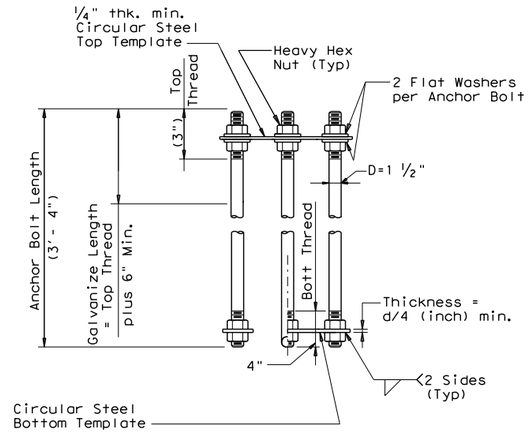
POLE ELEVATION

FINISH

The Contractor shall contact El Paso County for type of finish to be applied to pole and fixtures.

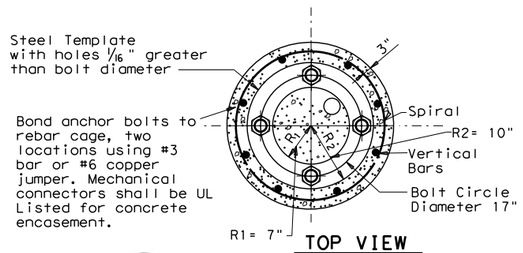


DETAIL A

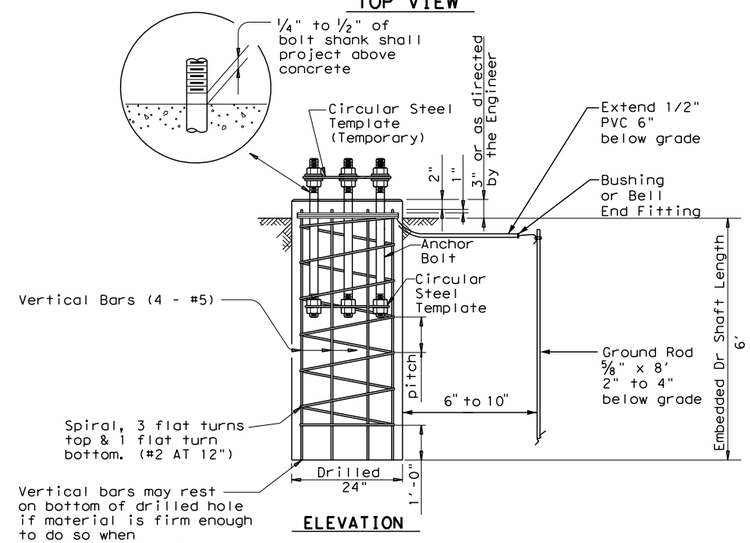


NUT ANCHOR

ANCHOR BOLT ASSEMBLY

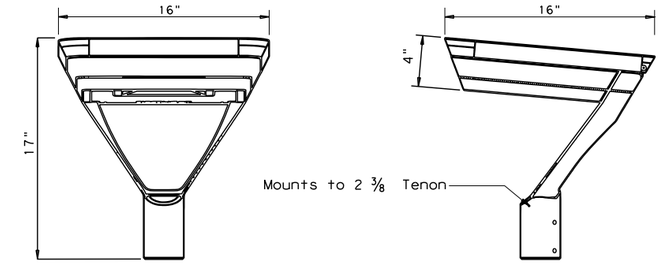


TOP VIEW

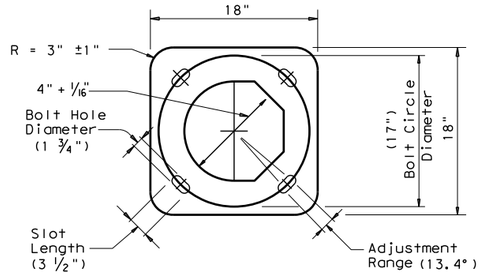


ELEVATION

FOUNDATION DETAILS



SOLAR LED FIXTURE



BASE PLATE PLAN

① 85% Min. penetration

② 60% Min. penetration
100% pemetration within
6" of circumferential
base welds.

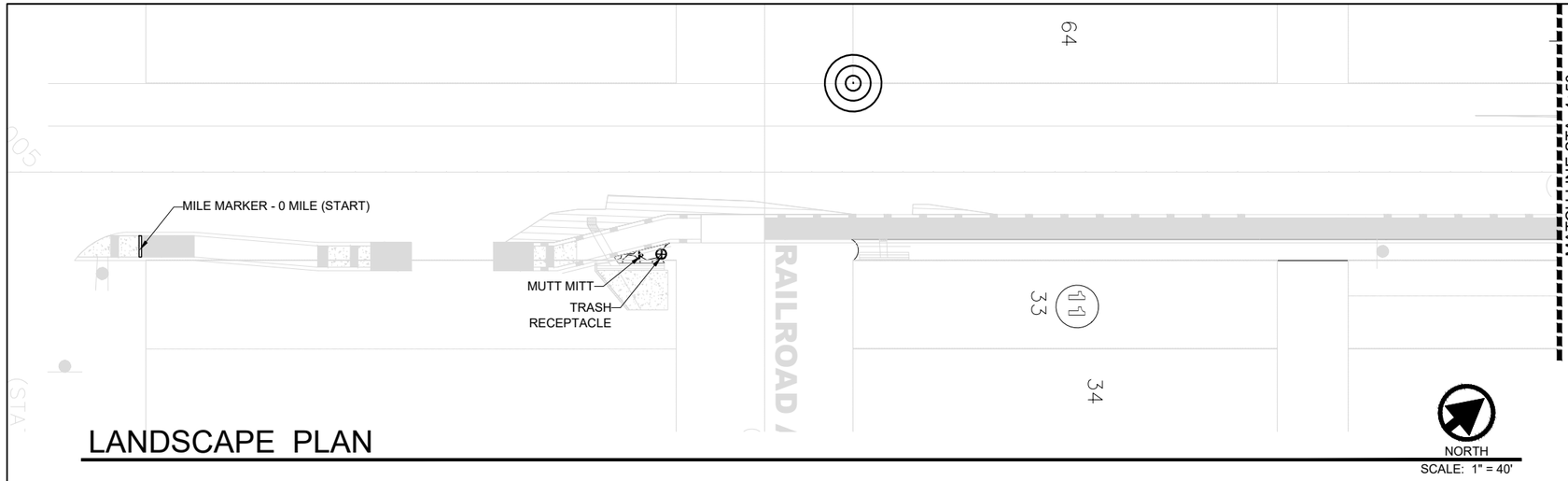
CONSOR F-12040

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

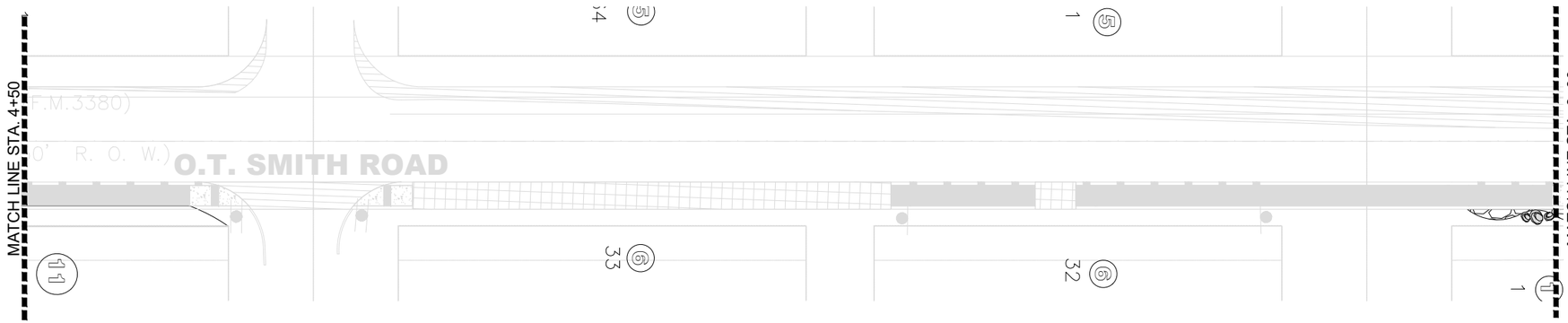
PEDESTRIAN ILLUMINATION ASSEMBLY DETAILS

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
			147
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	3
1002	6004	LANDSCAPE AMENITY (TY3)(TRASH RECEPTACLE)	EACH	1
1002	6005	LANDSCAPE AMENITY (TY4)(MUTT MITT DISPENSER)	EACH	1
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II)	CY	1

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
5 GALLON TREE - 3' HEIGHT MINIMUM		
	BUBBA DESERT WILLOW	CHILOPSIS LINEARIS 'BUBBA'
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 24 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

LANDSCAPE NOTES

- ALL UTILITY EASEMENTS SHALL BE MARKED PRIOR TO EXCAVATION, AND PARTICULAR ATTENTION PAID TO TREE PLACEMENT WITHIN AND THROUGHOUT SITE.
- THERE SHALL BE NO STEEL EDGING BETWEEN ROCK TYPES.
- CONTRACTOR SHALL PROVIDE ROCK SAMPLES AND OBTAIN APPROVAL FROM OWNER PRIOR TO FINAL DELIVERY OF QUARRIED MATERIALS.
- CONTRACTOR TO PAY CLOSE ATTENTION TO FINISH GRADES. SHOULD GRAVELED AREAS EXCEED 4:1 SLOPE, CONTRACTOR TO OBTAIN APPROVAL OF LANDSCAPE DESIGNER PRIOR TO MULCH INSTALLATION.
- ALL TREES SHALL BE SINGLE LEADER TRUNK, UNLESS INDICATED IN PLANS.
- CONTRACTOR TO VERIFY PLANT LEGEND QUANTITY MATCHES PLANS. ANY DISCREPANCIES TO BE REPORTED PRIOR TO BID.

SITE OBSERVATION SCHEDULE

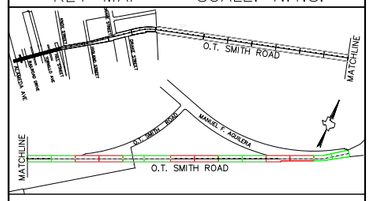
CONTRACTOR SHALL CONTACT DESERT ELEMENTS FOR INSPECTION ON THE FOLLOWING ITEMS:

- TREE REVIEW, PRIOR TO INSTALLATION (AT NURSERY OR ON SITE).
- PLANT PLACEMENT, PRIOR TO INSTALLATION OF MULCH.

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

desert elements
LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
DE-jennifer@elp.rr.com • phone: 575.589.9100

KEY–MAP SCALE: N.T.S.



0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

MCi Moreno Cardenas Inc.
TBPE Firm Registration No. F–000554
Leaders in Project Delivery & Performance

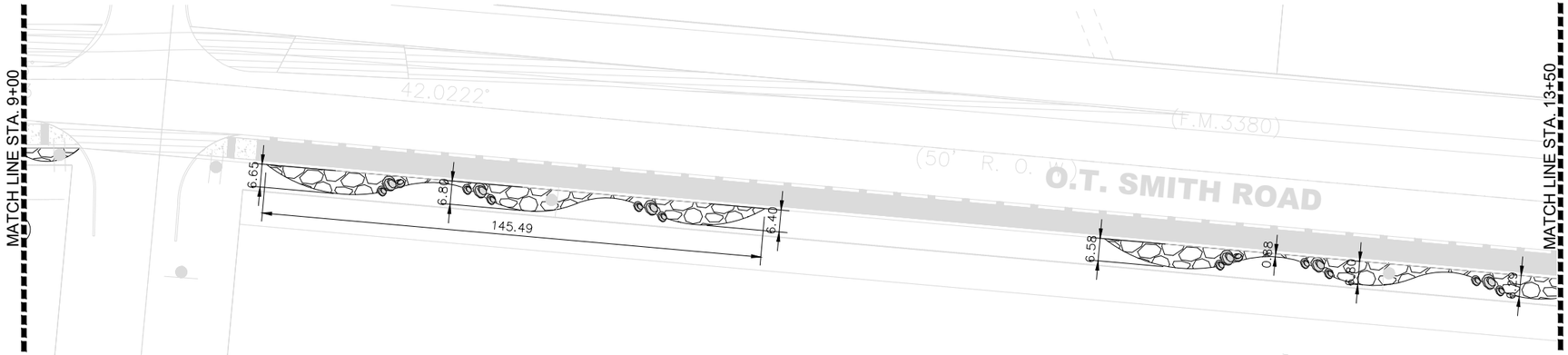
CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

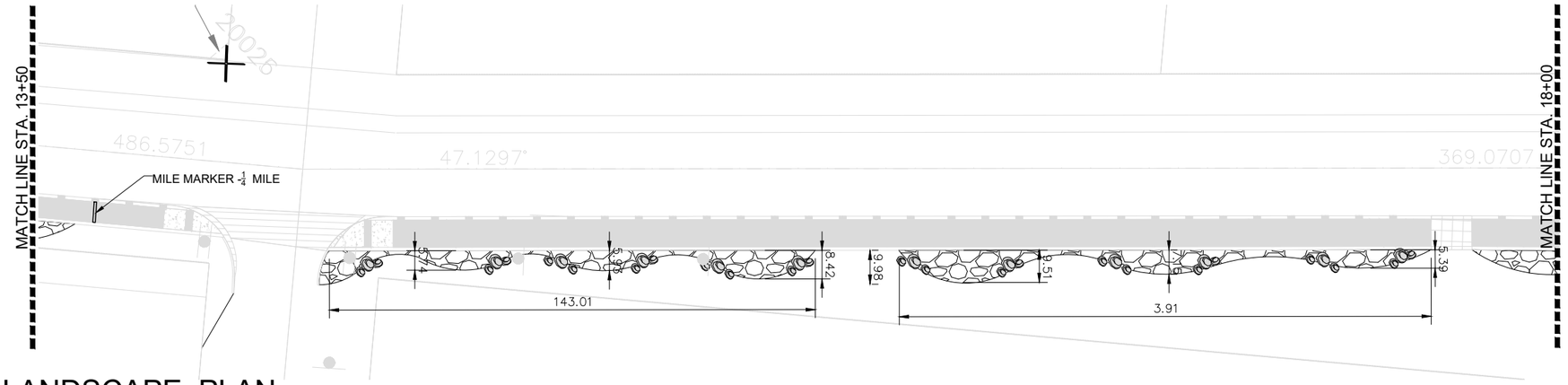
SHEET 1 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		148
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
5 GALLON TREE - 3' HEIGHT MINIMUM		
	BUBBA DESERT WILLOW	CHILOPSIS LINEARIS 'BUBBA'
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 24 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

LANDSCAPE NOTES

- ALL UTILITY EASEMENTS SHALL BE MARKED PRIOR TO EXCAVATION, AND PARTICULAR ATTENTION PAID TO TREE PLACEMENT WITHIN AND THROUGHOUT SITE.
- THERE SHALL BE NO STEEL EDGING BETWEEN ROCK TYPES.
- CONTRACTOR SHALL PROVIDE ROCK SAMPLES AND OBTAIN APPROVAL FROM OWNER PRIOR TO FINAL DELIVERY OF QUARRIED MATERIALS.
- CONTRACTOR TO PAY CLOSE ATTENTION TO FINISH GRADES. SHOULD GRAVELED AREAS EXCEED 4:1 SLOPE, CONTRACTOR TO OBTAIN APPROVAL OF LANDSCAPE DESIGNER PRIOR TO MULCH INSTALLATION.
- ALL TREES SHALL BE SINGLE LEADER TRUNK, UNLESS INDICATED IN PLANS.
- CONTRACTOR TO VERIFY PLANT LEGEND QUANTITY MATCHES PLANS. ANY DISCREPANCIES TO BE REPORTED PRIOR TO BID.

SITE OBSERVATION SCHEDULE

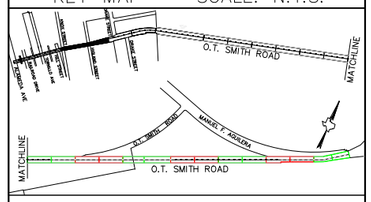
CONTRACTOR SHALL CONTACT DESERT ELEMENTS FOR INSPECTION ON THE FOLLOWING ITEMS:

- TREE REVIEW, PRIOR TO INSTALLATION (AT NURSERY OR ON SITE).
- PLANT PLACEMENT, PRIOR TO INSTALLATION OF MULCH.

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	54
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) (COBBLE)	CY	24

KEY–MAP SCALE: N.T.S.



0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

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

desert elements
LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
DE-jennifer@elp.rr.com • phone: 575.589.9100

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F–000554

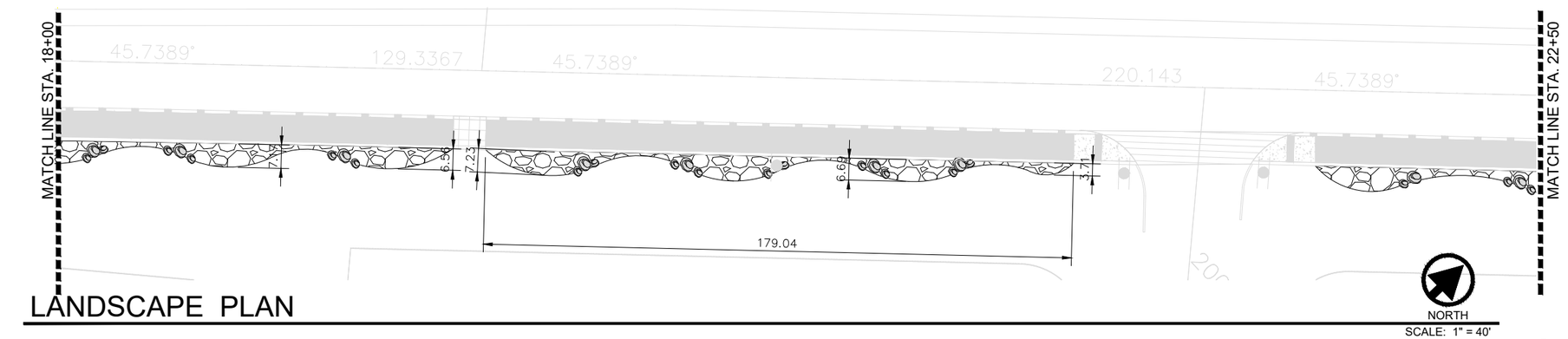
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 2 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
06	STP 2019(961)TAPS			149
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0924	06	560	CS	



LANDSCAPE PLAN

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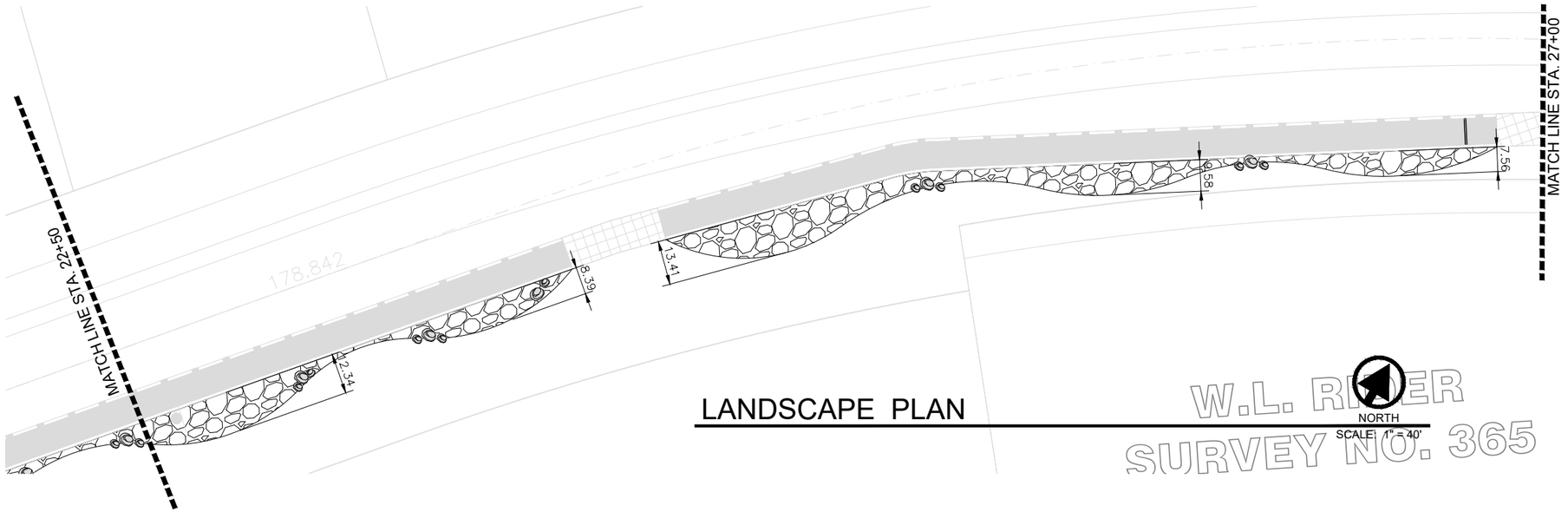
SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

LANDSCAPE LEGEND

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BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 2 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
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- CONTRACTOR SHALL PROVIDE ROCK SAMPLES AND OBTAIN APPROVAL FROM OWNER PRIOR TO FINAL DELIVERY OF QUARRIED MATERIALS.
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SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	44
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) (COBBLE)	CY	40

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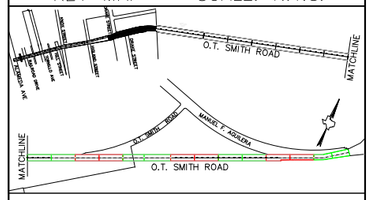

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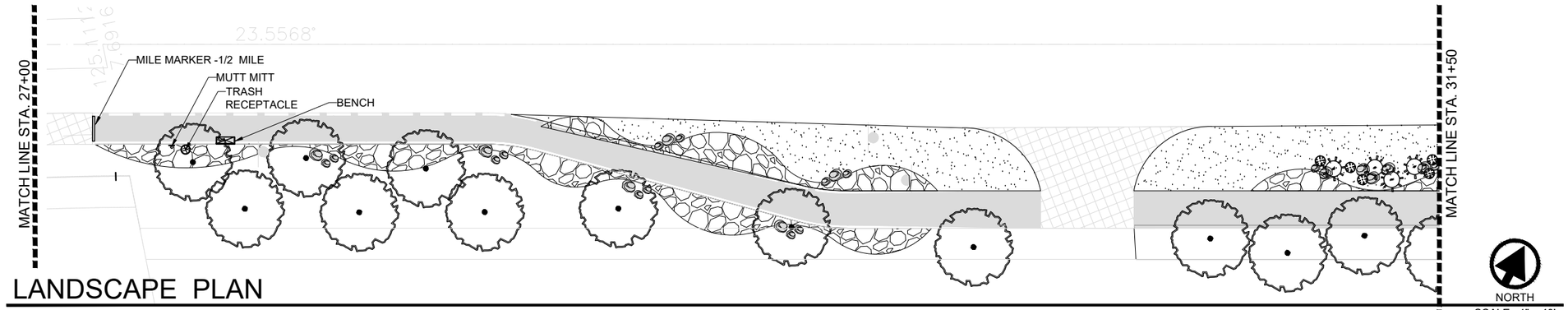
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

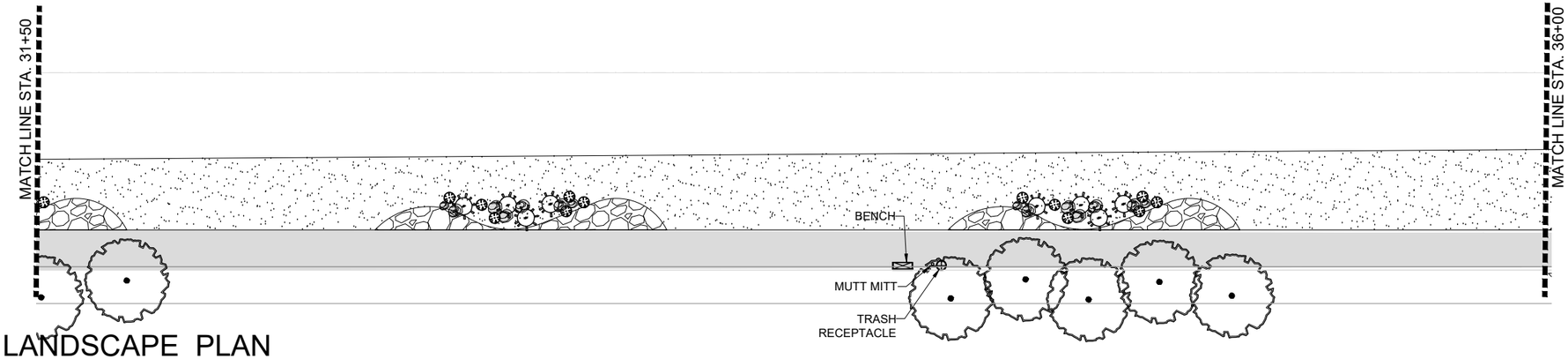
SHEET 3 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		150
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



LANDSCAPE PLAN

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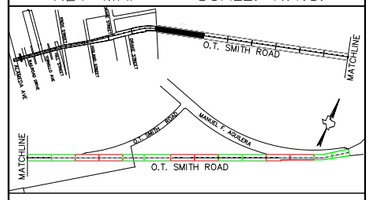
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 24 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
161	6012	GENERAL USE COMPOST	CY	1
162.2.5	6003	MULCH – STRAW	SY	919
164	6033	SEEDING FOR EROSION CTRL	SY	919
192	6009	PLANT MAT.–GROUP I–(OCOTILLO)	EACH	12
192	6010	PLANT MAT.–GROUP II–(YUCCA, BEAR GRASS, AGAVE)	EACH	19
192	6044	PLANT MAT.–(MIN 2"CAL. B&B)	EACH	20
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	51
1002	6003	LANDSCAPE AMENITY (TY2)(BENCH)	EACH	2
1002	6004	LANDSCAPE AMENITY (TY3)(TRASH RECEPTACLE)	EACH	2
1002	6005	LANDSCAPE AMENITY (TY4)(MUTT MITT DISPENSER)	EACH	2
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6001	LOOSE AGGR. FOR G'COVER (TYPE I) (1.25" FRANKLIN RED ROCK)	CY	123
1005 (COBBLE)	6002	LOOSE AGGR. FOR G'COVER (TYPE II) CY		31

KEY–MAP SCALE: N.T.S.



0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

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TBPE Firm Registration No. F–000554
Leaders in Project Delivery & Performance

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 4 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
06	STP 2019(961)TAPS	151

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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desert elements LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
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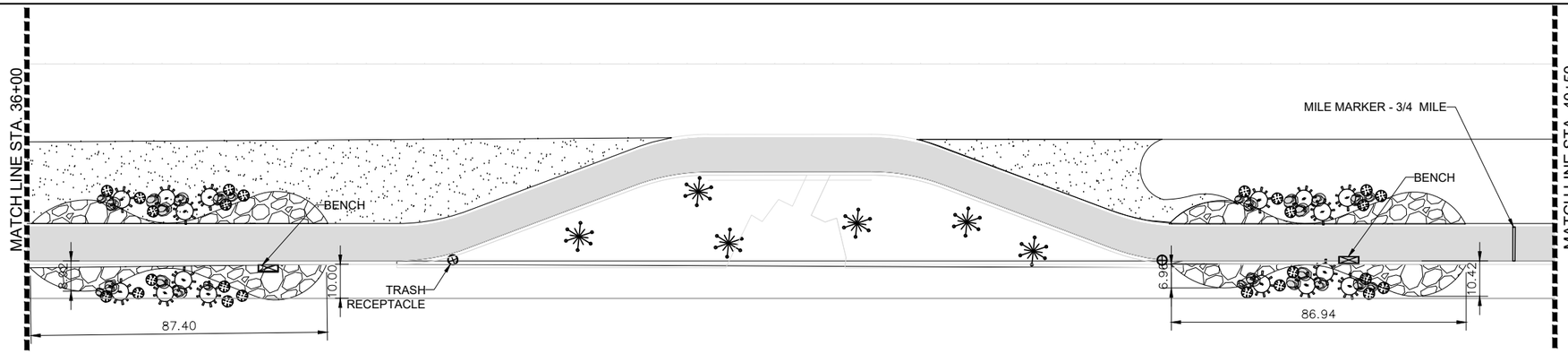

LANDSCAPE PLAN

NORTH

SCALE: 1" = 40'

LANDSCAPE PLAN

NORTH

SCALE: 1" = 40'

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.–GROUP I–(OCOTILLO)	EACH	6
192	6010	PLANT MAT.–GROUP II–(YUCCA, BEAR GRASS, AGAVE)	EACH	30
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	29
1002	6003	LANDSCAPE AMENITY (TY2)(BENCH)	EACH	2
1002	6004	LANDSCAPE AMENITY (TY3)(TRASH RECEPTACLE)	EACH	1
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6001	LOOSE AGGR. FOR G'COVER (TYPE I) (1.25" FRANKLIN RED ROCK)	CY	40
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) (COBBLE)	CY	16

LANDSCAPE LEGEND

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	BEAR GRASS	NOLINA MICROCARPA
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GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
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BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
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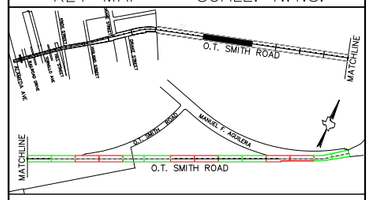

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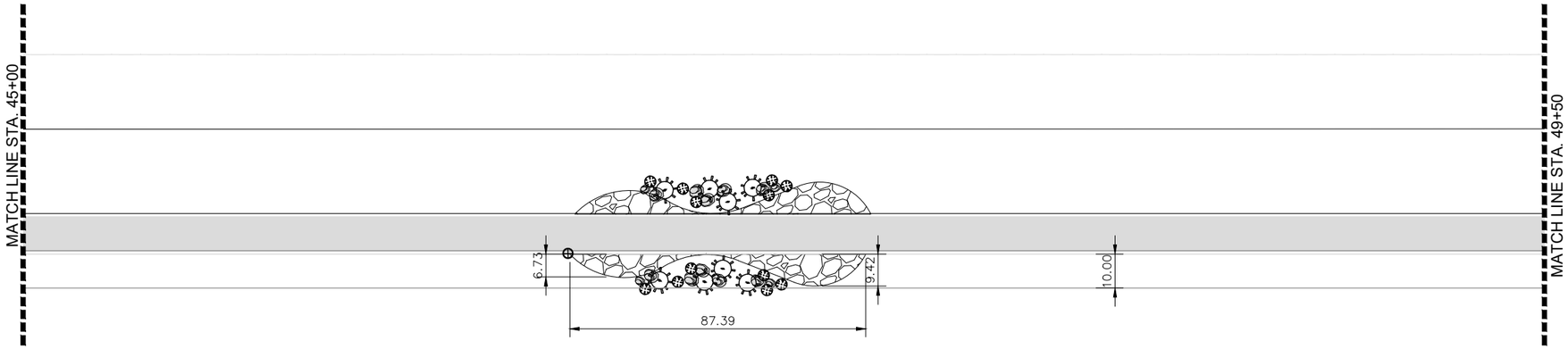
TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 5 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		152
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
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192	6010	PLANT MAT.-GROUP II-(YUCCA, BEAR GRASS, AGAVE)	EACH	24
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	28
1002	6003	LANDSCAPE AMENITY (TY2)(BENCH)	EACH	1
1002	6004	LANDSCAPE AMENITY (TY3)(TRASH RECEPTACLE)	EACH	2
1002	6005	LANDSCAPE AMENITY (TY4)(MUTT MITT DISPENSER)	EACH	1
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) (COBBLE)	CY	16

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- CONTRACTOR SHALL PROVIDE ROCK SAMPLES AND OBTAIN APPROVAL FROM OWNER PRIOR TO FINAL DELIVERY OF QUARRIED MATERIALS.
- CONTRACTOR TO PAY CLOSE ATTENTION TO FINISH GRADES. SHOULD GRAVELED AREAS EXCEED 4:1 SLOPE, CONTRACTOR TO OBTAIN APPROVAL OF LANDSCAPE DESIGNER PRIOR TO MULCH INSTALLATION.
- ALL TREES SHALL BE SINGLE LEADER TRUNK, UNLESS INDICATED IN PLANS.
- CONTRACTOR TO VERIFY PLANT LEGEND QUANTITY MATCHES PLANS. ANY DISCREPANCIES TO BE REPORTED PRIOR TO BID.

SITE OBSERVATION SCHEDULE

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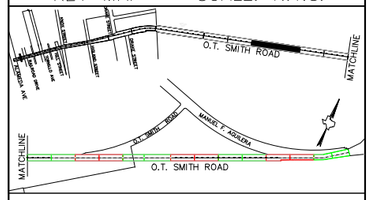
- TREE REVIEW, PRIOR TO INSTALLATION (AT NURSERY OR ON SITE).
- PLANT PLACEMENT, PRIOR TO INSTALLATION OF MULCH.

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

desert elements
LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
DE-jennifer@elp.rr.com ▪ phone: 575.589.9100

KEY–MAP SCALE: N.T.S.



0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

MCi Moreno Cardenas Inc.
TBPE Firm Registration No. F-000554
Leaders in Project Delivery & Performance

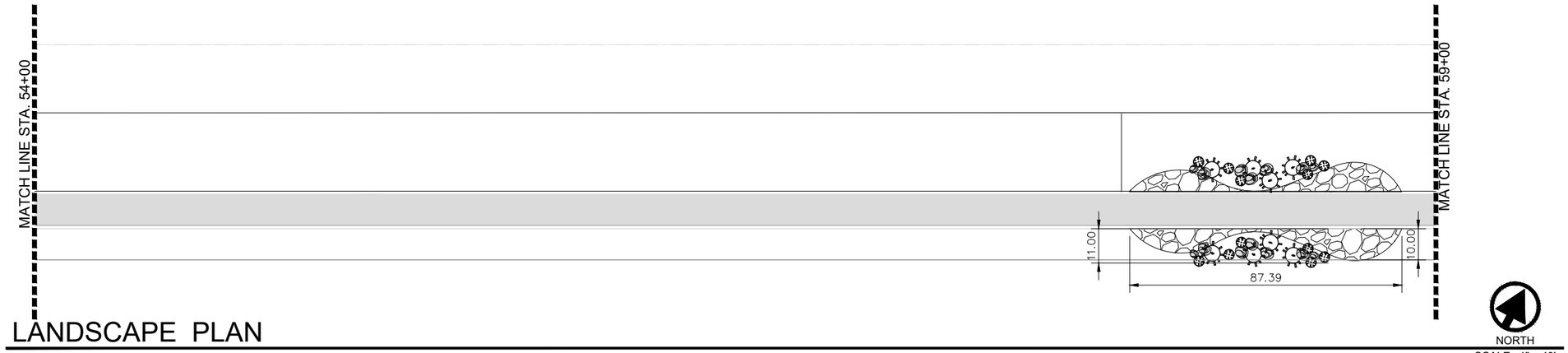
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 6 OF 15

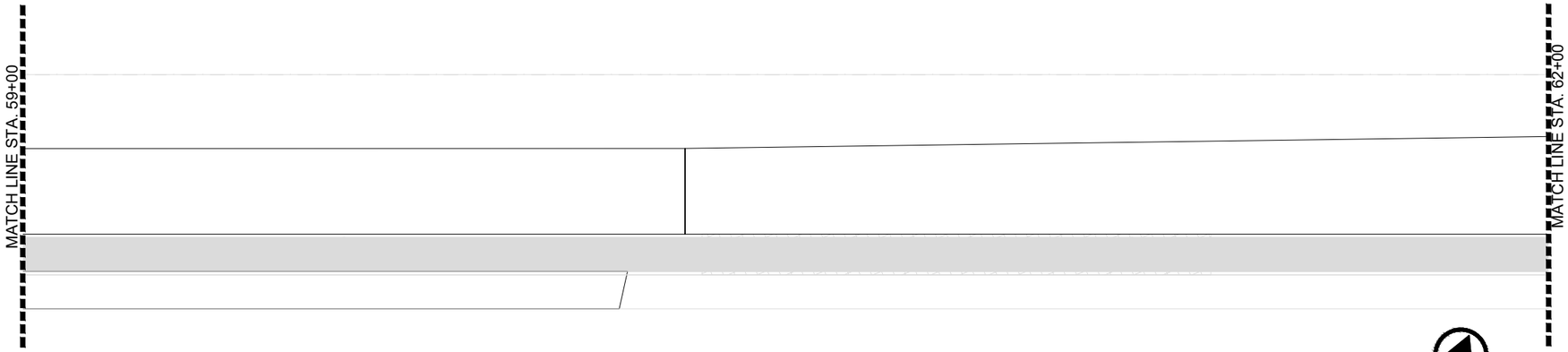
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		153
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH

SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH

SCALE: 1" = 40'

SHEET TOTALS				
ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.–GROUP I–(OCOTILLO)	EACH	8
192	6010	PLANT MAT.–GROUP II–(YUCCA, BEAR GRASS, AGAVE)	EACH	12
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	26
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) (COBBLE)	CY	5

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
5 GALLON TREE - 3' HEIGHT MINIMUM		
	BUBBA DESERT WILLOW	CHILOPSIS LINEARIS 'BUBBA'
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 24 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

LANDSCAPE NOTES

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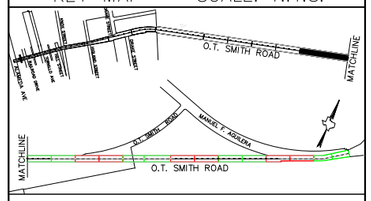

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05–30–2019

Moreno Cardenas Inc.
TBPE Firm Registration No. F-000554
Leaders in Project Delivery & Performance

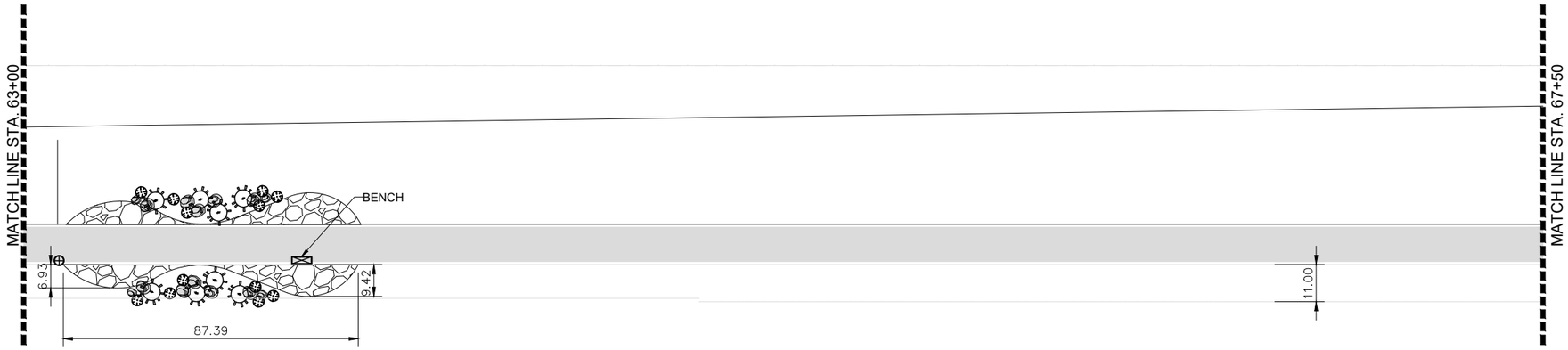
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 7 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		154
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH

SCALE: 1" = 40'

LANDSCAPE PLAN

NORTH

SCALE: 1" = 40'

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.–GROUP I–(OCOTILLO)	EACH	20
192	6010	PLANT MAT.–GROUP II–(YUCCA, BEAR GRASS, AGAVE)	EACH	29
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	34
1002	6003	LANDSCAPE AMENITY (TY2)(BENCH)	EACH	2
1002	6004	LANDSCAPE AMENITY (TY3)(TRASH RECEPTACLE)	EACH	2
1002	6005	LANDSCAPE AMENITY (TY4)(MUTT MITT DISPENSER)	EACH	1
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) (COBBLE)	CY	22

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
5 GALLON TREE - 3' HEIGHT MINIMUM		
	BUBBA DESERT WILLOW	CHILOPSIS LINEARIS 'BUBBA'
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
GRAVELS	SOAPTREE YUCCA	YUCCA ELATA

1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL

6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL

SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 24 (NO WATERING REQUIREMENT)

ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL

BOULDERS AND SITE FURNISHINGS

FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL

6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL

32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL

COLORED CONCRETE MILE MARKER - PER DETAIL

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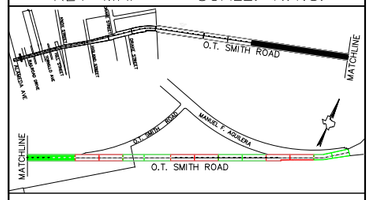

0 20 40

SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

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TBPE Firm Registration No. F–000554
Leaders in Project Delivery & Performance

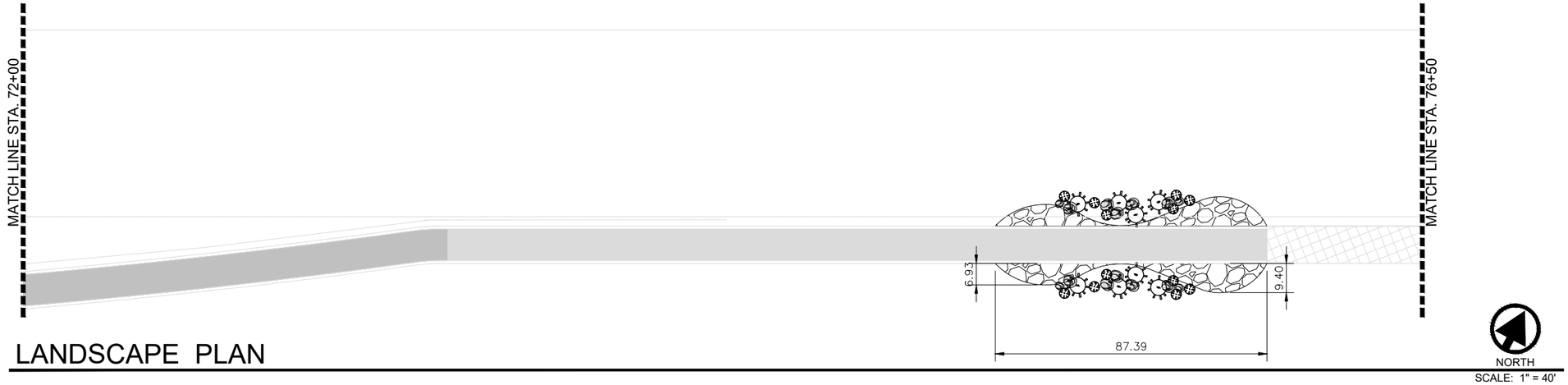
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 8 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		155
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.-GROUP I-(OCOTILLO)	EACH	16
192	6010	PLANT MAT.-GROUP II-(YUCCA,		
192	6044	PLANT MAT.-(MIN 2"CAL. B&B)	EACH	24
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	28
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II)		
(COBBLE)		CY		15

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
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BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 2 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

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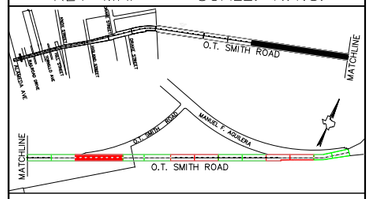

0 20 40
SCALE: 1"=40'

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CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 9 OF 15

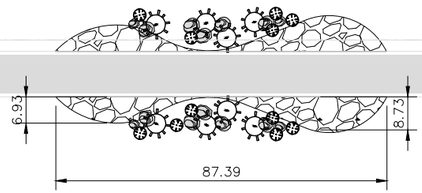
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
06	STP 2019(961)TAPS			156
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0924	06	560	CS	

MATCH LINE STA. 81+00

MATCH LINE STA. 85+50

LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



MATCH LINE STA. 85+50

MATCH LINE STA. 90+00

LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
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	BUBBA DESERT WILLOW	CHILOPSIS LINEARIS 'BUBBA'
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
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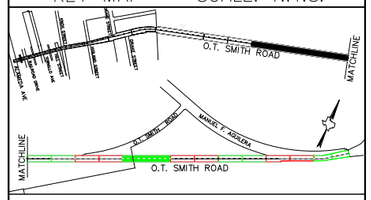

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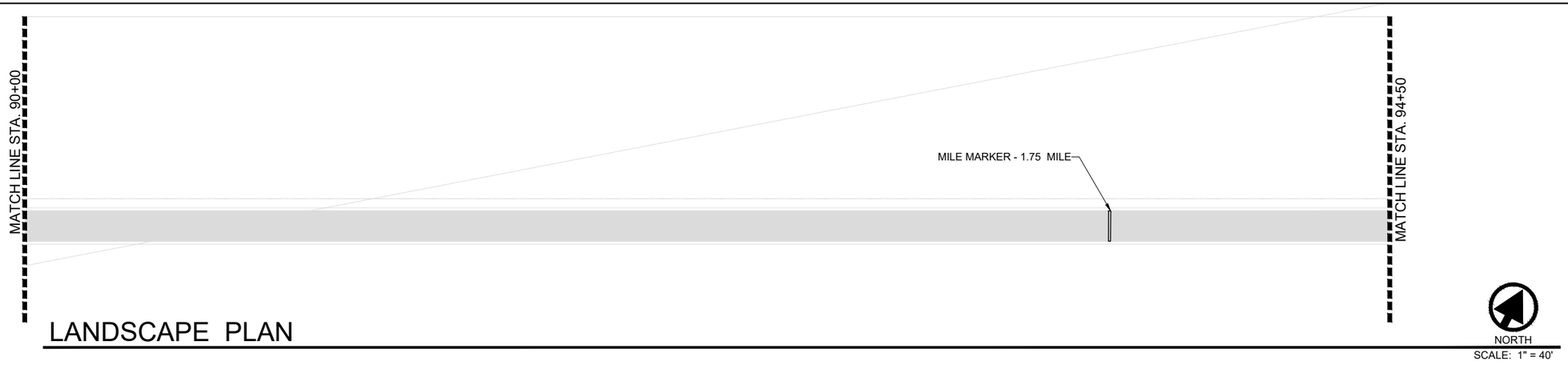
CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

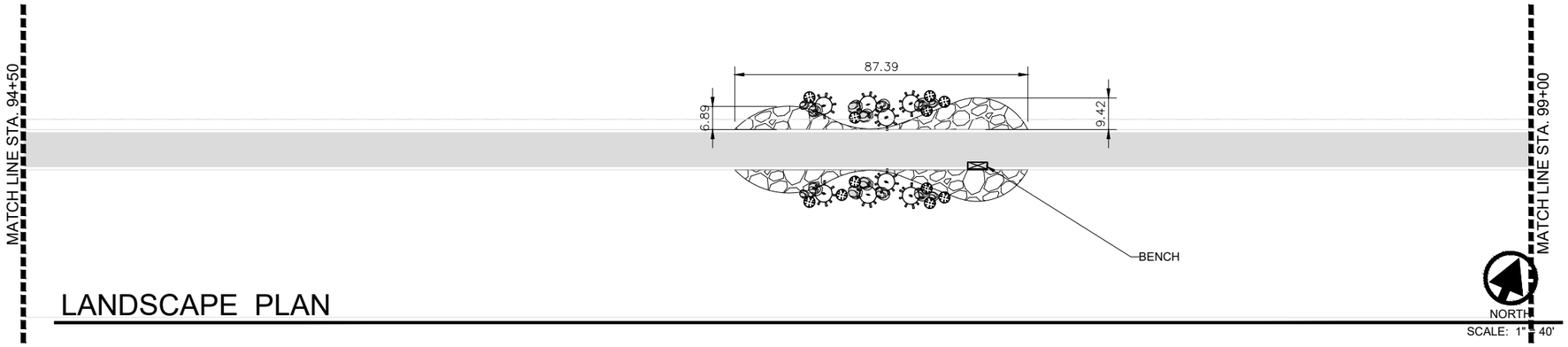
SHEET 10 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		157
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



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	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 2 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

LANDSCAPE NOTES

- ALL UTILITY EASEMENTS SHALL BE MARKED PRIOR TO EXCAVATION, AND PARTICULAR ATTENTION PAID TO TREE PLACEMENT WITHIN AND THROUGHOUT SITE.
- THERE SHALL BE NO STEEL EDGING BETWEEN ROCK TYPES.
- CONTRACTOR SHALL PROVIDE ROCK SAMPLES AND OBTAIN APPROVAL FROM OWNER PRIOR TO FINAL DELIVERY OF QUARRIED MATERIALS.
- CONTRACTOR TO PAY CLOSE ATTENTION TO FINISH GRADES. SHOULD GRAVELED AREAS EXCEED 4:1 SLOPE, CONTRACTOR TO OBTAIN APPROVAL OF LANDSCAPE DESIGNER PRIOR TO MULCH INSTALLATION.
- ALL TREES SHALL BE SINGLE LEADER TRUNK, UNLESS INDICATED IN PLANS.
- CONTRACTOR TO VERIFY PLANT LEGEND QUANTITY MATCHES PLANS. ANY DISCREPANCIES TO BE REPORTED PRIOR TO BID.

SITE OBSERVATION SCHEDULE

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WARNING!
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CALL 811
FOR FIELD LOCATING
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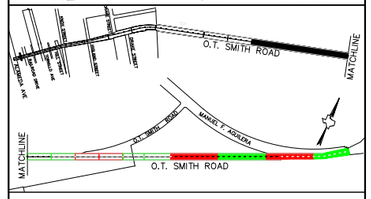
desert elements
LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
DE-jennifer@elp.rr.com • phone: 575.589.9100

KEY–MAP SCALE: N.T.S.



0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

MCi Moreno Cardenas Inc.
TBPE Firm Registration No. F–000554
Leaders in Project Delivery & Performance

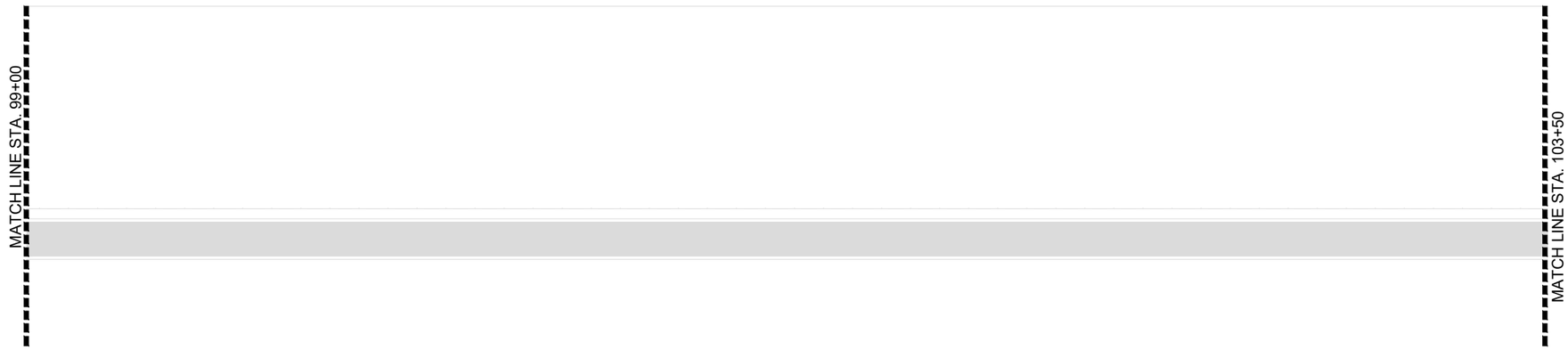
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

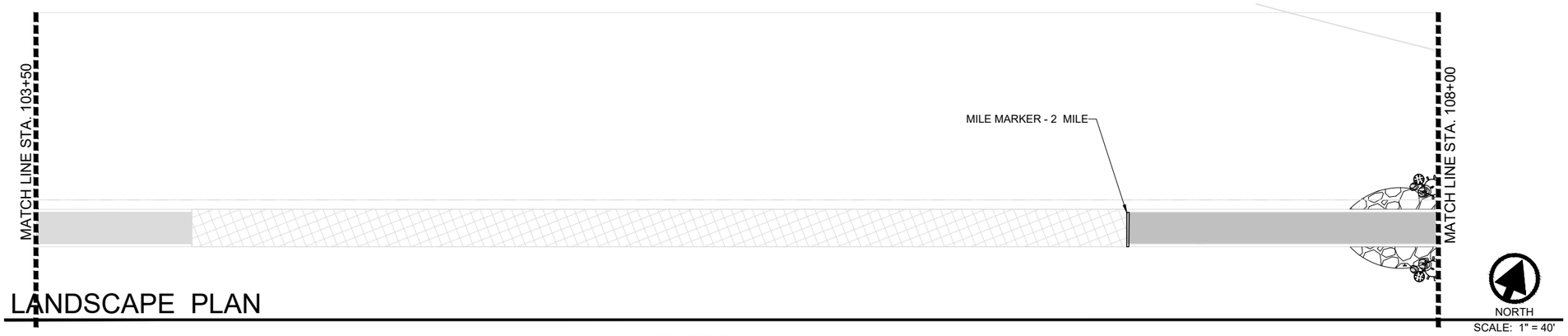
SHEET 11 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		158
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

SHEET TOTALS				
ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.–GROUP I–(OCOTILLO)	EACH	2
192	6010	PLANT MAT.–GROUP II–(YUCCA, BEAR GRASS, AGAVE)	EACH	2
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	4
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005	6002	LOOSE AGGR. FOR G'COVER (TYPE II) COBBLE	CY	3

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
5 GALLON TREE - 3' HEIGHT MINIMUM		
	BUBBA DESERT WILLOW	CHILOPSIS LINEARIS 'BUBBA'
BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 2 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
	COLORED CONCRETE MILE MARKER - PER DETAIL	
	MUTT MITT PET WASTE DISPOSAL, OR EQUAL ON POST - PER DETAIL	

LANDSCAPE NOTES

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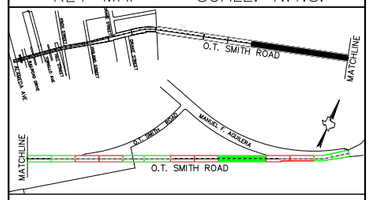


0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

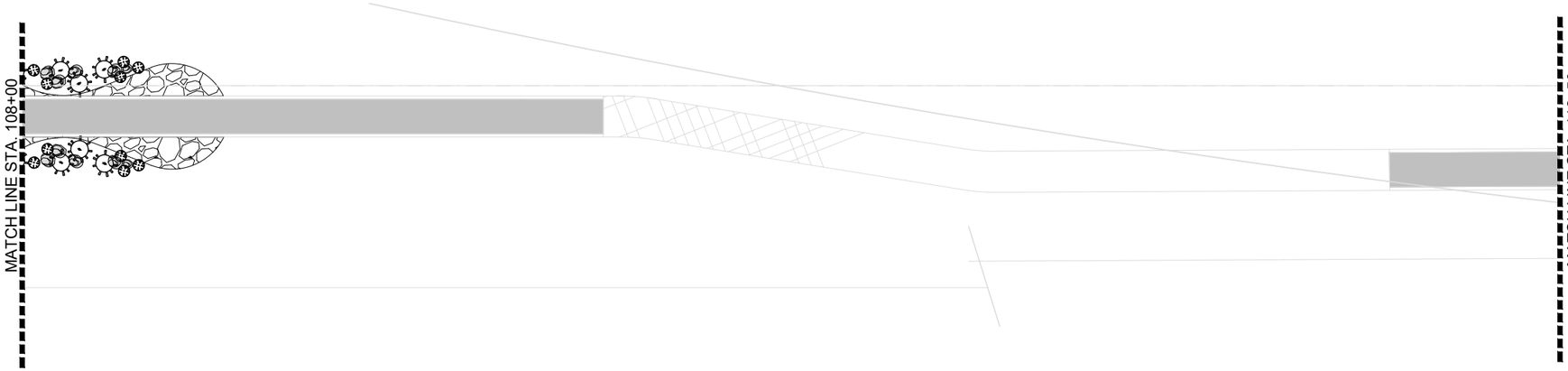
CAMINO REAL
REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

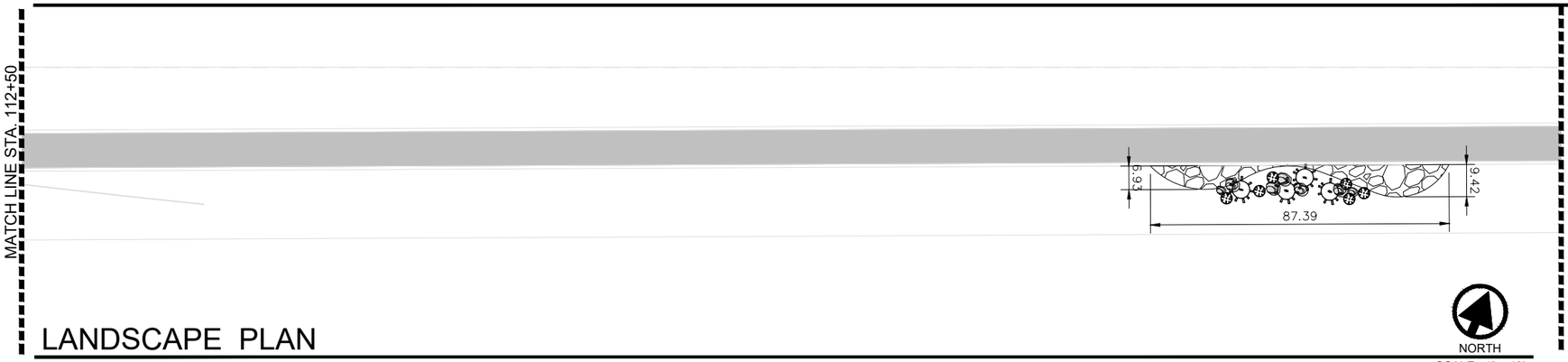
SHEET 12 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
06	STP 2019(961)TAPS			159
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0924	06	560	CS	



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

SHEET TOTALS				
ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.–GROUP I–(OCOTILLO)	EACH	10
192	6010	PLANT MAT.–GROUP II–(YUCCA, BEAR GRASS, AGAVE)	EACH	16
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	17
1005 (COBBLE)	6002	LOOSE AGGR. FOR G'COVER (TYPE II)	CY	9

LANDSCAPE LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
2" CALIPER TREE - 10' HEIGHT MINIMUM		
	CHINESE PISTACHE	PISTACIA CHINENSIS
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BARE ROOT SUCCULENT - W/ DEPT. OF AG. TAG - 3'-5' H		
	OCOTILLO	FOUQUIERA SPLENDENS
1 GALLON SHRUB - 12" HEIGHT MINIMUM		
	CENTURY PLANT	AGAVE AMERICANA
	BEAR GRASS	NOLINA MICROCARPA
	SOAPTREE YUCCA	YUCCA ELATA
GRAVELS		
	1.25" FRANKLIN RED ROCK, 3" DEPTH & NONWOVEN WEED BARRIER FABRIC, PER DETAIL	
	6-10" FRANKLIN RED RIPRAP, UNMORTARED - PER CIVIL	
	SEEDING W/ TACKIFIER, STRAW MULCH - TxDOT SPEC FOR EROSION CTRL SEEDING, DISTRICT 24 (NO WATERING REQUIREMENT)	
	ARROYO ROCK - 2-4", 3" DEPTH W/ 5 OUNCE NONWOVEN WEED BARRIER FABRICK, PER DETAIL	
BOULDERS AND SITE FURNISHINGS		
	FRANKLIN RED BOULDER - 2X2 AND 3X3 - 50% OF EACH - HALF BURIED PER DETAIL	
	6' BENCH - SLATTED (POSSIBLY W/ SHADE) - PER DETAIL	
	32 GALLON SLATTED STEEL TRASH RECEPTACLE - PER DETAIL	
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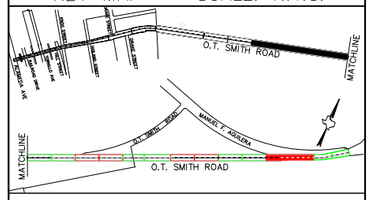

0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

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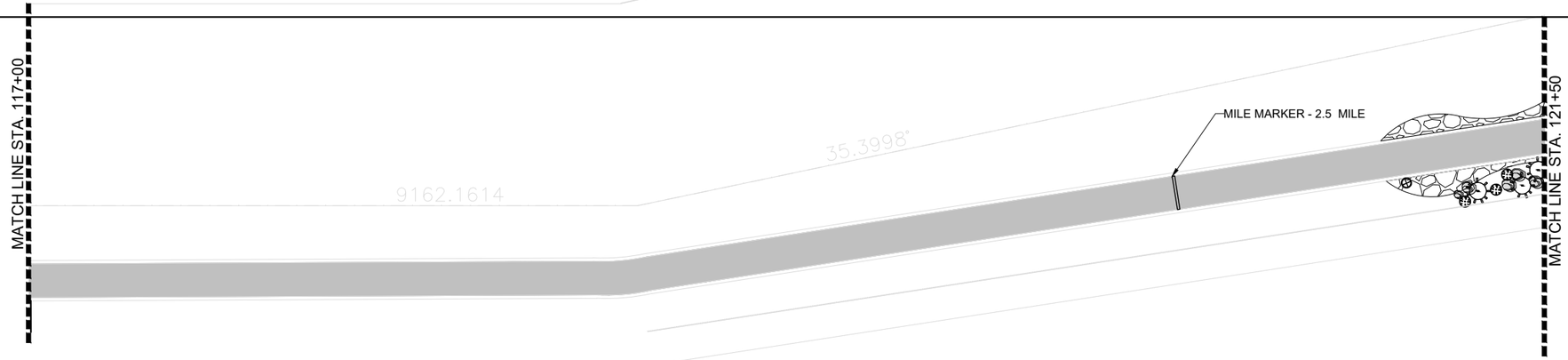
CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

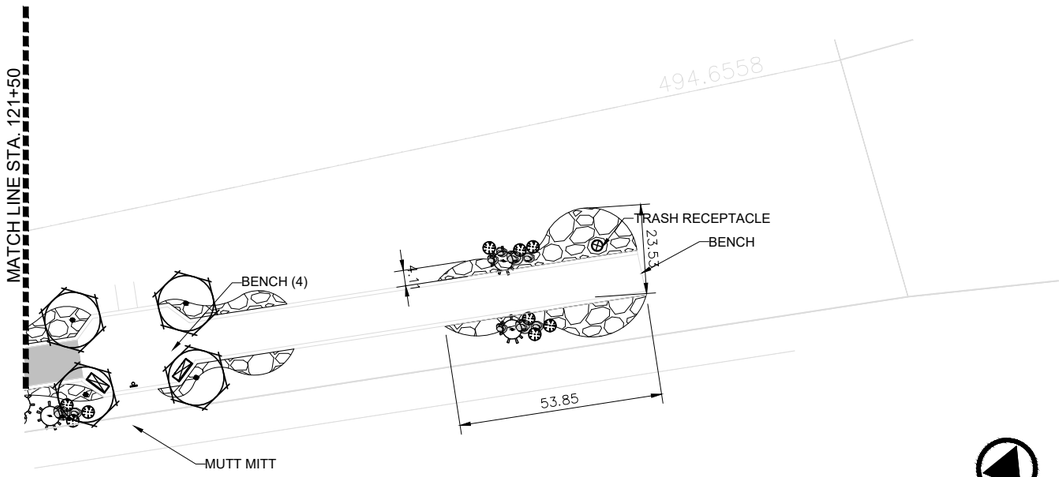
SHEET 13 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		160
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'



LANDSCAPE PLAN

NORTH
SCALE: 1" = 40'

SHEET TOTALS				
ITEM #	DESC #	DESCRIPTION	UNIT	QTY
192	6009	PLANT MAT.-GROUP I-(OCOTILLO)	EACH	6
192	6044	PLANT MAT.-(MIN 2"CAL. B&B)	EACH	12
192	6021	PLANT MAT.-(5 GAL. TREE)	EACH	4
193	6001	PLANT MAINTENANCE	MONTH	3
1002	6002	LANDSCAPE AMENITY (TY1)(BOULDER)	EACH	14
1002	6003	LANDSCAPE AMENITY (TY2)(BENCH)	EACH	5
1002	6004	LANDSCAPE AMENITY (TY3)(TRASH RECEPTACLE)	EACH	2
1002	6005	LANDSCAPE AMENITY (TY4)(MUTT MITT DISPENSER)	EACH	1
1002	6006	LANDSCAPE AMENITY(TY5)(MILE MARKER)	EACH	1
1005 (COBBLE)	6002	LOOSE AGGR. FOR G'COVER (TYPE II)	CY	8

LANDSCAPE LEGEND

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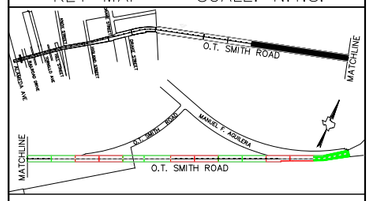

0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05–30–2019

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CAMINO REAL
REGIONAL MOBILITY AUTHORITY

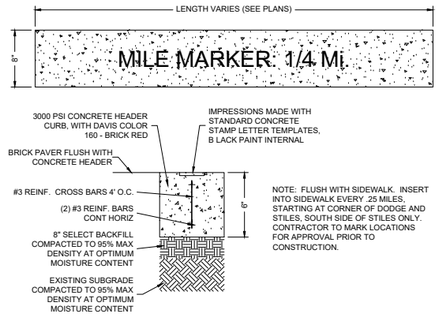
TORNILLO SHARED
USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 14 OF 15

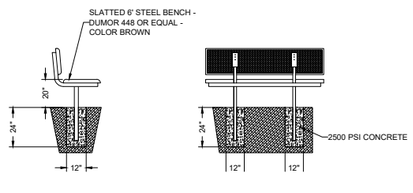
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
06	STP 2019(961)TAPS	161

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



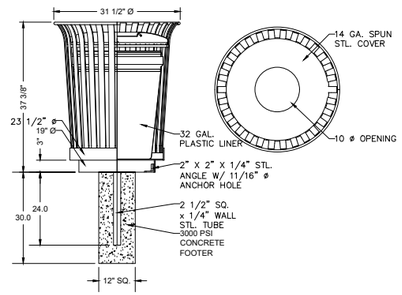
COLORED CONCRETE MILE MARKER

NOT TO SCALE



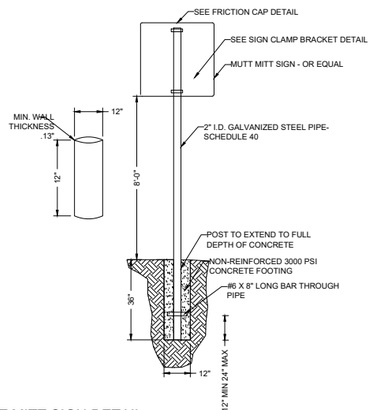
BENCH DETAIL

NOT TO SCALE



TRASH RECEPTACLE DETAIL

NOT TO SCALE



MUTT MITT SIGN DETAIL

NOT TO SCALE

0 20 40

SCALE: 1"=40'

100% SUBMITTAL

05-30-2019

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TORNILLO SHARED USE PATH – BASE BID II

AESTHETIC PLAN

SHEET 15 OF 15

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		162
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

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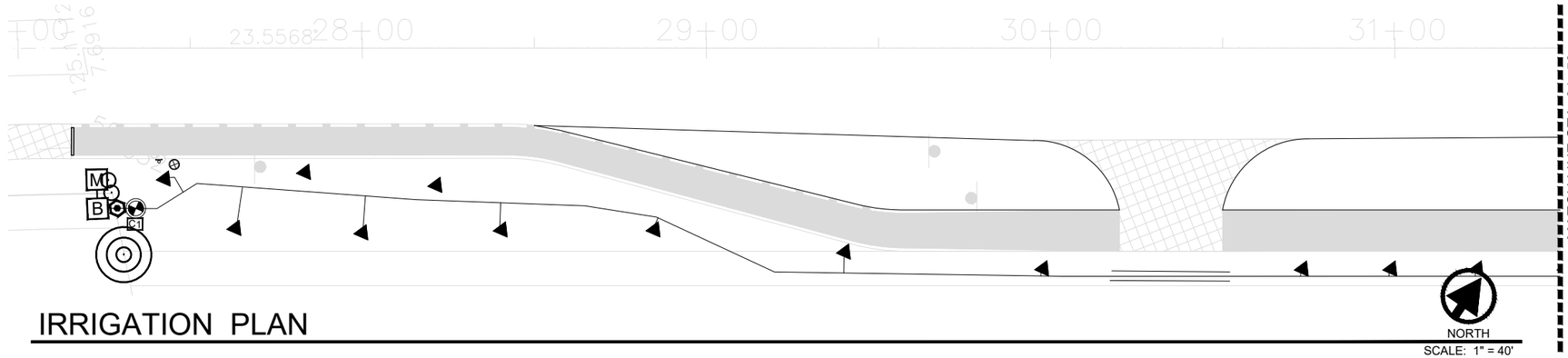
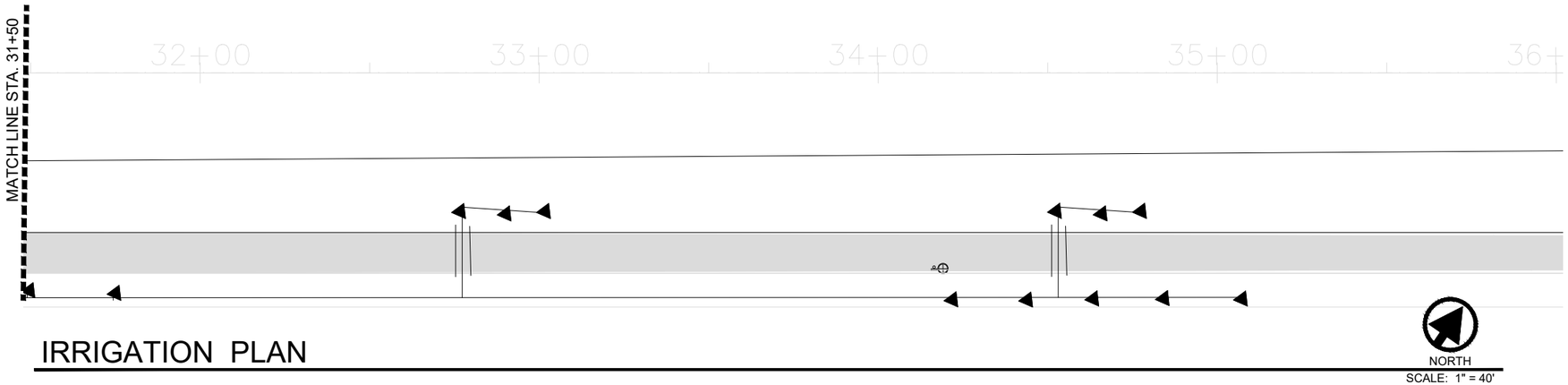


IRRIGATION PLAN



IRRIGATION PLAN

IRRIGATION NOTES

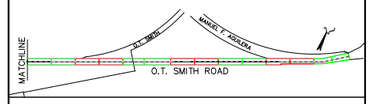
- IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13067, AUSTIN, TX 78711.
- DESIGN PRESSURE FOR IRRIGATION SYSTEM IS 30 PSI
- CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING AND PROPOSED UTILITIES AND ALL SITE CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- IRRIGATION SHALL BE INSTALLED ACCORDING TO PLANS, DETAILS, AND SPECIFICATIONS. SHOULD CHANGES BE IMPLEMENTED IN THE FIELD, A NEW SET OF PLANS IS REQUIRED TO BE SUBMITTED TO TXDOT. LANDSCAPE DESIGNER IS NOT UNDER CONTRACT TO PROVIDE THESE PLANS, EXCEPT AS PROVIDED FOR IN ORIGINAL CONTRACT.
- CONTRACTOR WILL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS DESIGNED, WHEN IT IS OBVIOUS THAT FIELD CONDITIONS EXIST, THAT WERE NOT CONSIDERED AT TIME OF DESIGNING THE SYSTEM. ANY CONDITIONS NOTED AS SUCH, SHALL BE REPORTED TO THE ARCHITECT AND IRRIGATION DESIGNER. IF THE CONTRACTOR FAILS TO DO SO, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ANY CORRECTIONS NEEDED.
- PLANS SCHEMATIC FOR READABILITY. CONTRACTOR TO ADJUST AS NECESSARY TO FIT SITE.
- CONTRACTOR SHALL VERIFY STATIC PRESSURE AT METER MEETS SYSTEM NEEDS. LICENSED IRRIGATOR TO AMEND AS NECESSARY.
- PROVIDE SHUTOFF VALVE BETWEEN METER AND BACKFLOW.
- CONTRACTOR IS RESPONSIBLE FOR CONNECTING AUTOMATIC CONTROLLER TO ELECTRICITY.
- 14 GA. SOLID COPPER WIRE (PVC INSULATED AND UL APPROVED) SHALL RUN FROM CONTROLLER TO VALVES. COMMON WIRE TO BE 12GA.
- ALL CONTROL WIRING FROM THE VALVES TO THE CONTROLLER MUST BE INSTALLED IN A 1" PVC CONDUIT PIPE IF BURIED BENEATH CONCRETE OR ASPHALT SURFACES.
- LOCATE VALVES AWAY FROM LOW SPOTS OR AREAS OF DRAINAGE FLOW.
- VALVE CAPS SHALL MATCH COLOR OF SURROUNDING MATERIAL, AS CLOSELY AS POSSIBLE.
- ALL MAINLINES SHALL BE BURIED MIN. 18", ALL LATERALS 12".
- MAINTAIN 4" MINIMUM CLEARANCE BETWEEN PIPE RUNNING IN THE SAME TRENCH. CONTROL WIRE SHALL ALWAYS BE TO THE SIDE AND BELOW THE TOP OF THE PIPE RUNNING IN THE SAME TRENCH.
- POLYETHYLENE TUBING TO BE PLACED UNDER WEED BARRIER FABRIC. MICROTUBING TO BE STAKED.
- ALL PIPING/WIRING RUNNING BENEATH PAVED SURFACES (DRIVES, SIDEWALKS, ETC.) SHALL BE INSTALLED IN SCH 40 PVC SLEEVES. SLEEVES SHALL BE OF THE SIZE SO THAT THE INSIDE DIAMETER OF THE SLEEVE IS 3 TIMES GREATER THAN THAT OF THE COMBINED OUTER DIAMETER OF ALL ITEMS INSTALLED IN THE SLEEVES.
- PEA GRAVEL SHALL BE INSTALLED AT THE BASE OF ALL VALVE BOXES, WITH A CLEARANCE OF MIN. 2" BETWEEN VALVE AND TOP OF GRAVEL.
- AT TIME OF WALK THROUGH INSPECTION FOR ACCEPTANCE THE FOLLOWING SHALL BE PROVIDED TO EPDOT - MEDIANS SECTION
  - a. AS-BUILT DRAWINGS.
  - b. TOBOSFTUS FIELD TRANSMITTER.
  - c. BACK FLOW TEST RESULTS.
  - d. ALL DOCUMENTATION FOR THE TRANSFER OF WATER METER(S).
  - e. CLARIFY THE MAINTENANCE RESPONSIBILITY DURING WARRANTY PERIOD.

IRRIGATION LEGEND

SYMBOL	ITEM
M	3/4" METER - CONTRACTOR TO COORDINATE WITH EPCTWID
B	3/4" FEBCO 825 BACKFLOW PREVENTER AND ENCLOSURE - PER DETAIL
	1" BRASS PORT VALVE
C1	1" REMOTE CONTROL VALVE, RAINBRD 100-PESB W/ AMIAD Y FILTER AFTER THE VALVE & RAIN BIRD TBOS4CMUS CONTROLLER/ WITH POTTED LATCHING SOLENOID & TBOSFTUS FIELD TRANSMITTER (SEE DETAIL FOR INSTALLATION)
	MAINLINE - 1" SCHED. 40 PVC
	PVC SLEEVE - 2 SIZES LARGER THAN LATERAL OR MAIN
	LATERAL LINE - SCHED. 40 PVC - 3/4"
▲	RAINBIRD XERI-BIRD 8 MULTI-OUTLET EMISSION DEVICE RAINBIRD XB-20 EMITTERS - 8 PER TREE

SHEET TOTALS

ITEM #	DESC #	DESCRIPTION	UNIT	QTY
170	6001	IRRIGATION SYSTEM	LS	1



0 20 40
SCALE: 1"=40'

100% SUBMITTAL

05-30-2019

Moreno Cardenas Inc.
TBPE Firm Registration No. F-000554
Leaders in Project Delivery & Performance

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

IRRIGATION PLAN

SHEET 1 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	SHEET NO.
06	STP 2019(961)TAPS	163

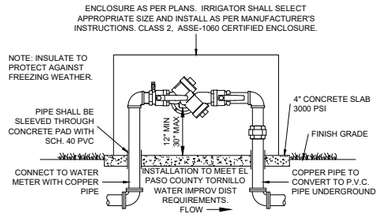
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

STATE OF TEXAS
JENNIFER L. BARR
15899
LICENSED IRRIGATOR

5/30/19

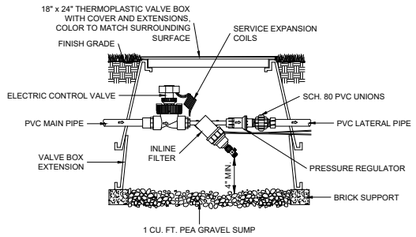
WARNING!
BEFORE YOU DIG
CALL 811
FOR FIELD LOCATING EXISTING UTILITIES

desert elements LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
DE-jennifer@elp.rr.com • phone: 575.589.9100



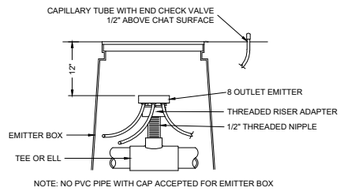
RPA FEBCO Mo.825Y DETAIL

NOT TO SCALE



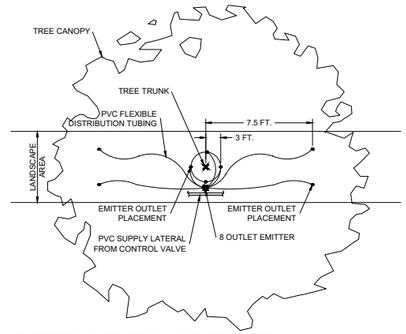
REMOTE CONTROL VALVE, PRESSURE REGULATOR & FILTER

NOT TO SCALE



DRIP EMITTER DETAIL

NOT TO SCALE



EMITTER OUTLET PLACEMENT DETAIL

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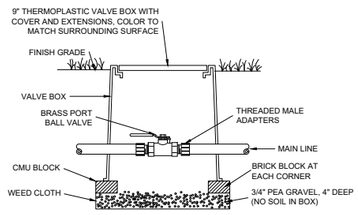
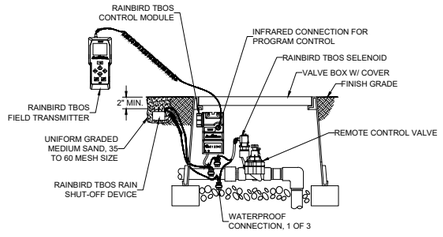


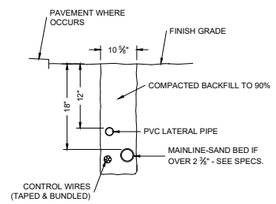
ISOLATION VALVE DETAIL

NOT TO SCALE



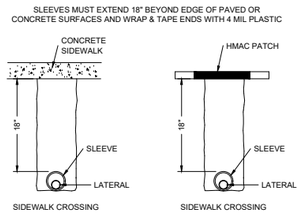
TBOS BATTERY OPERATED CONTROLLER W/ TRANSMITTER

NOT TO SCALE



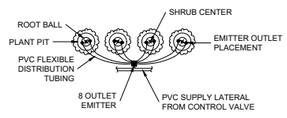
TRENCHING DETAIL

NOT TO SCALE



SLEEVING STANDARD DETAIL

NOT TO SCALE



EMITTER OUTLET PLACEMENT DETAIL AT SHRUB

NOT TO SCALE

0 20 40

SCALE: 1"=40'

100% SUBMITTAL

05-14-2019

MCi Moreno Cardenas Inc.

TBPE Firm Registration No. F-000554

Leaders in Project Delivery & Performance

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH – BASE BID II

IRRIGATION PLAN

STATE OF TEXAS
JENNIFER L BARR
15899
LICENSED IRRIGATOR

5/30/19

WARNING!
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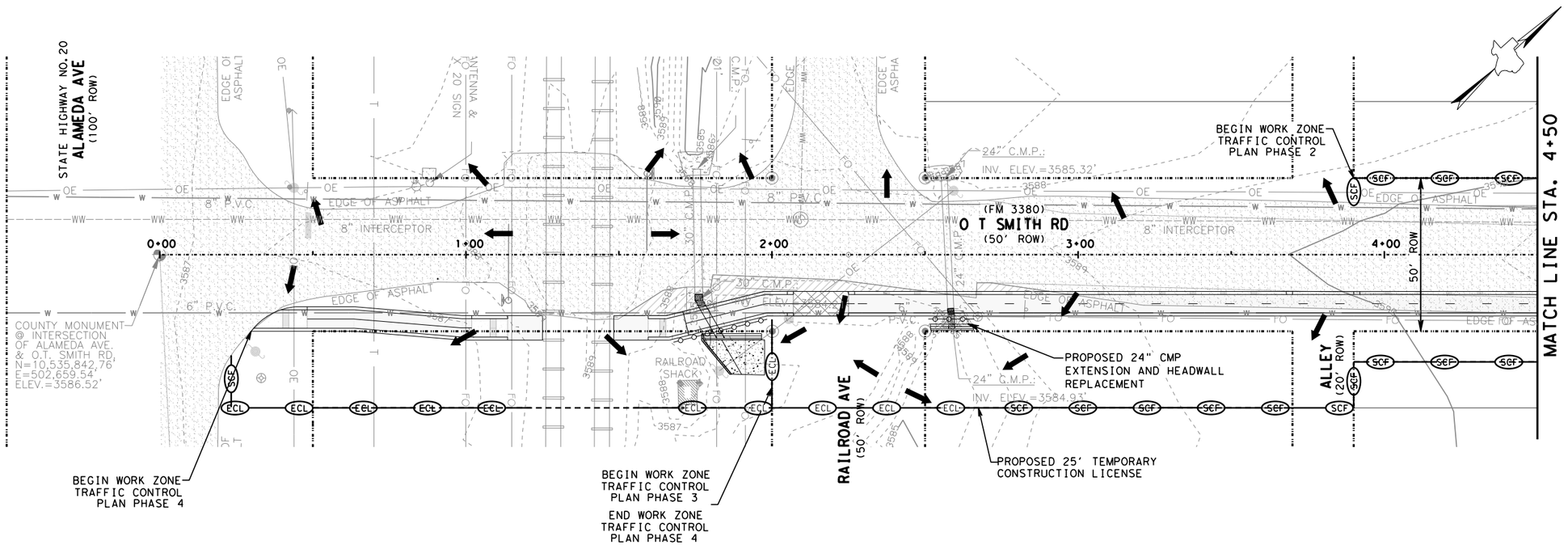
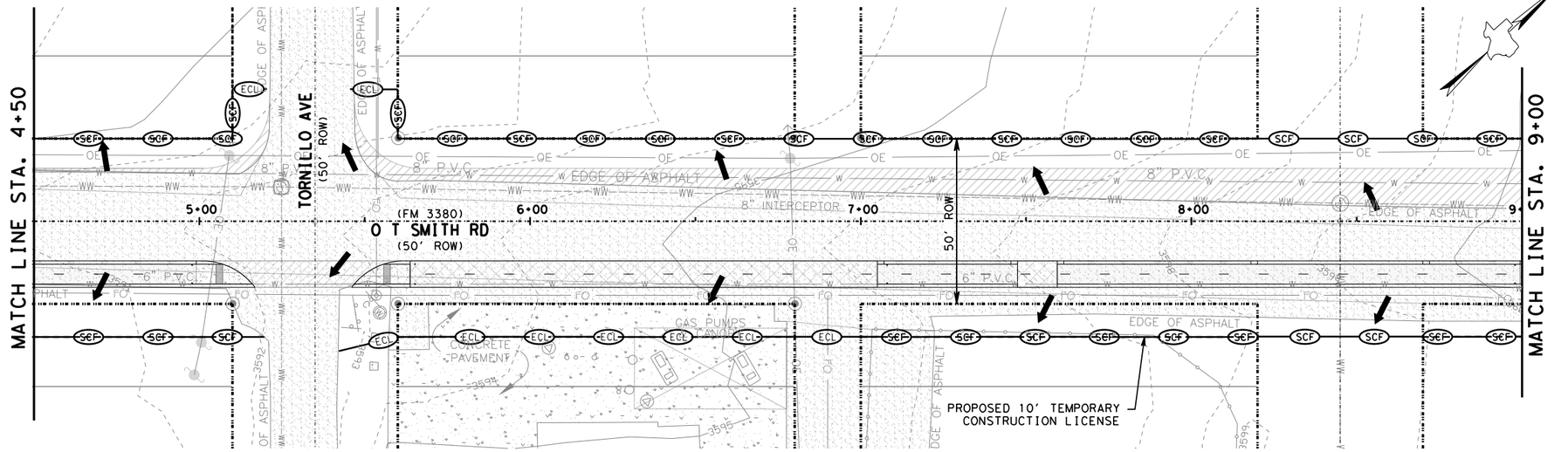
desert elements LANDSCAPE DESIGN, LLC
1-3 ardovino drive, sunland park, new mexico 88063
DE-jennifer@elp.rr.com • phone: 575.589.9100

SHEET 2 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
06	STP 2019(961)TAPS		164
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL)(TY1)	SY	334
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	334
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	700
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	700
506	6042	BIODEG EROSN CONT LOGS (INSTL)(18")	LF	211
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	211

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
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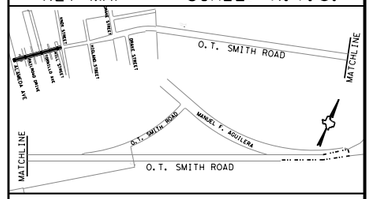
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL
REGIONAL MOBILITY AUTHORITY

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

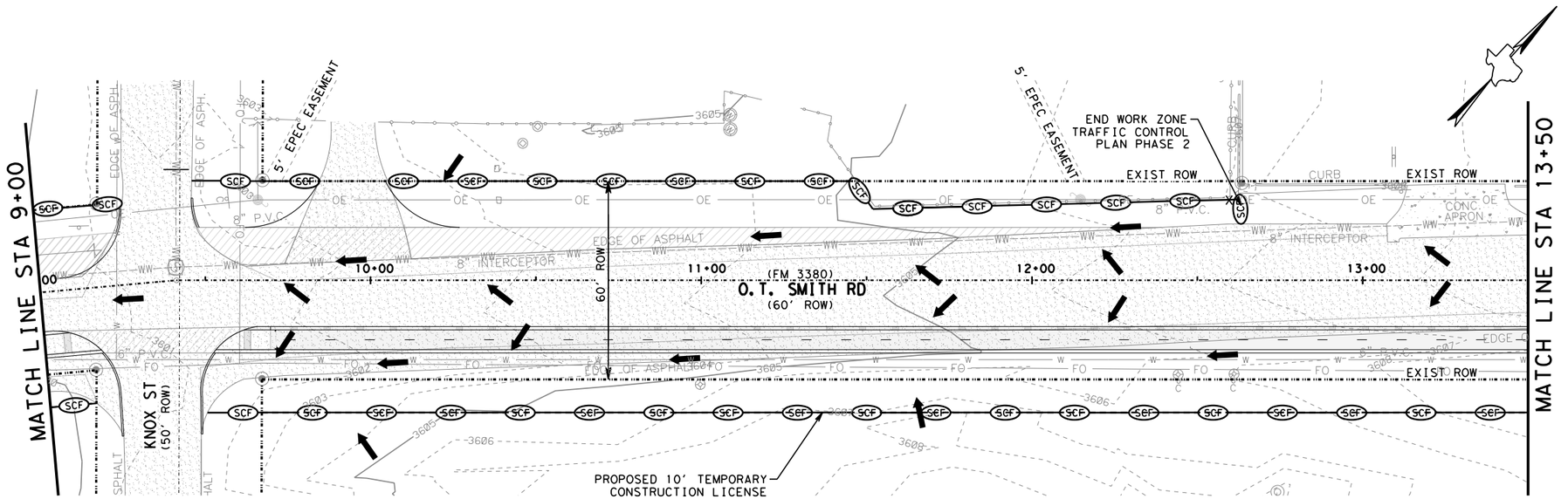
TORNILLO SHARED USE PATH

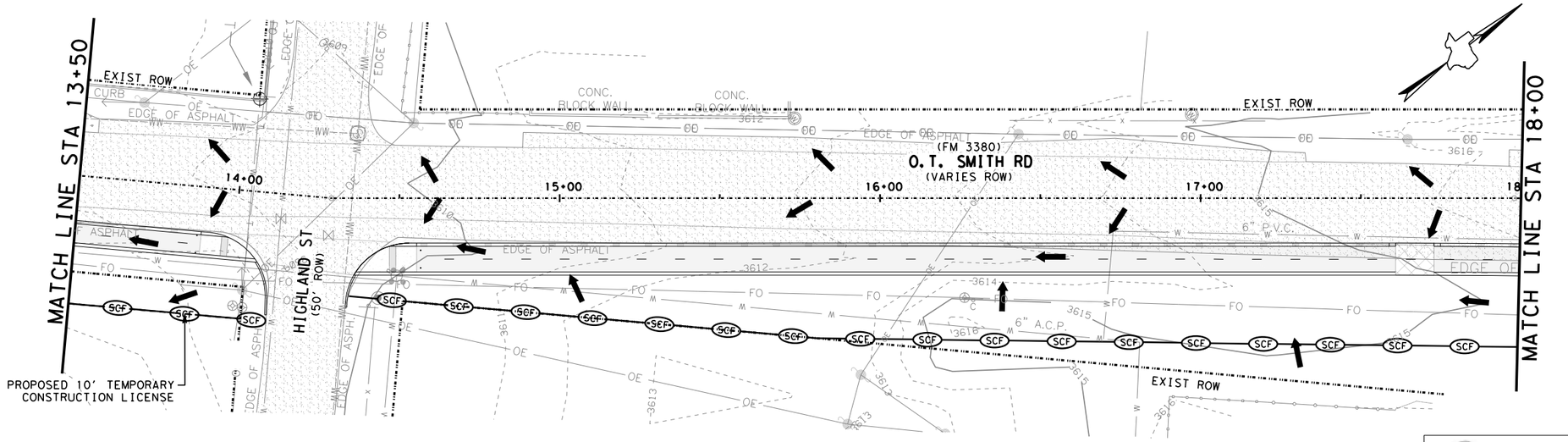
STORMWATER POLLUTION PREVENTION PLAN

STA 0+00 TO STA 9+00

SHEET 1 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		165
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





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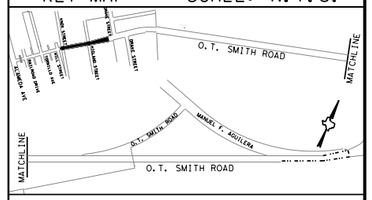

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4,1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH
STORMWATER POLLUTION PREVENTION PLAN
STA 9+00 TO STA 18+00

SHEET 2 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		166
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL)(TY1)	SY	334
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	334
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1192
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1192

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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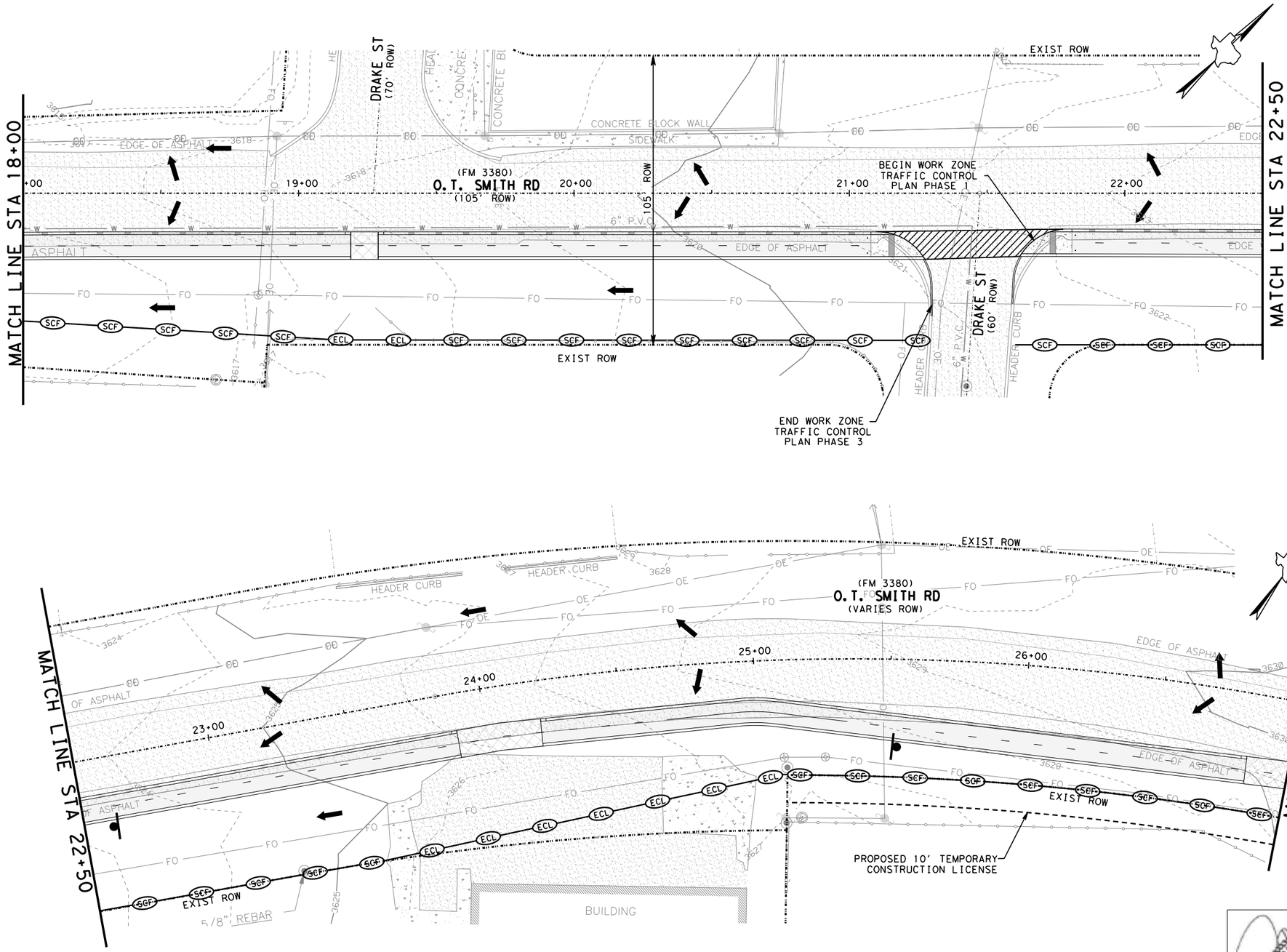
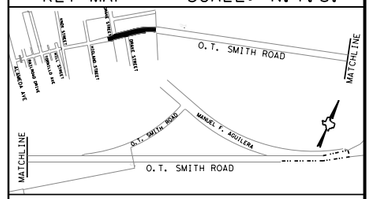


KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4,1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

STA 18+00 TO STA 27+00

SHEET 3 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	SHEET NO.
6	STP 2019(961)TAPS	167

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL)(TY1)	SY	223
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	223
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	676
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	676
506	6042	BIODEG EROSN CONT LOGS (INSTL)(18")	LF	162
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	162

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

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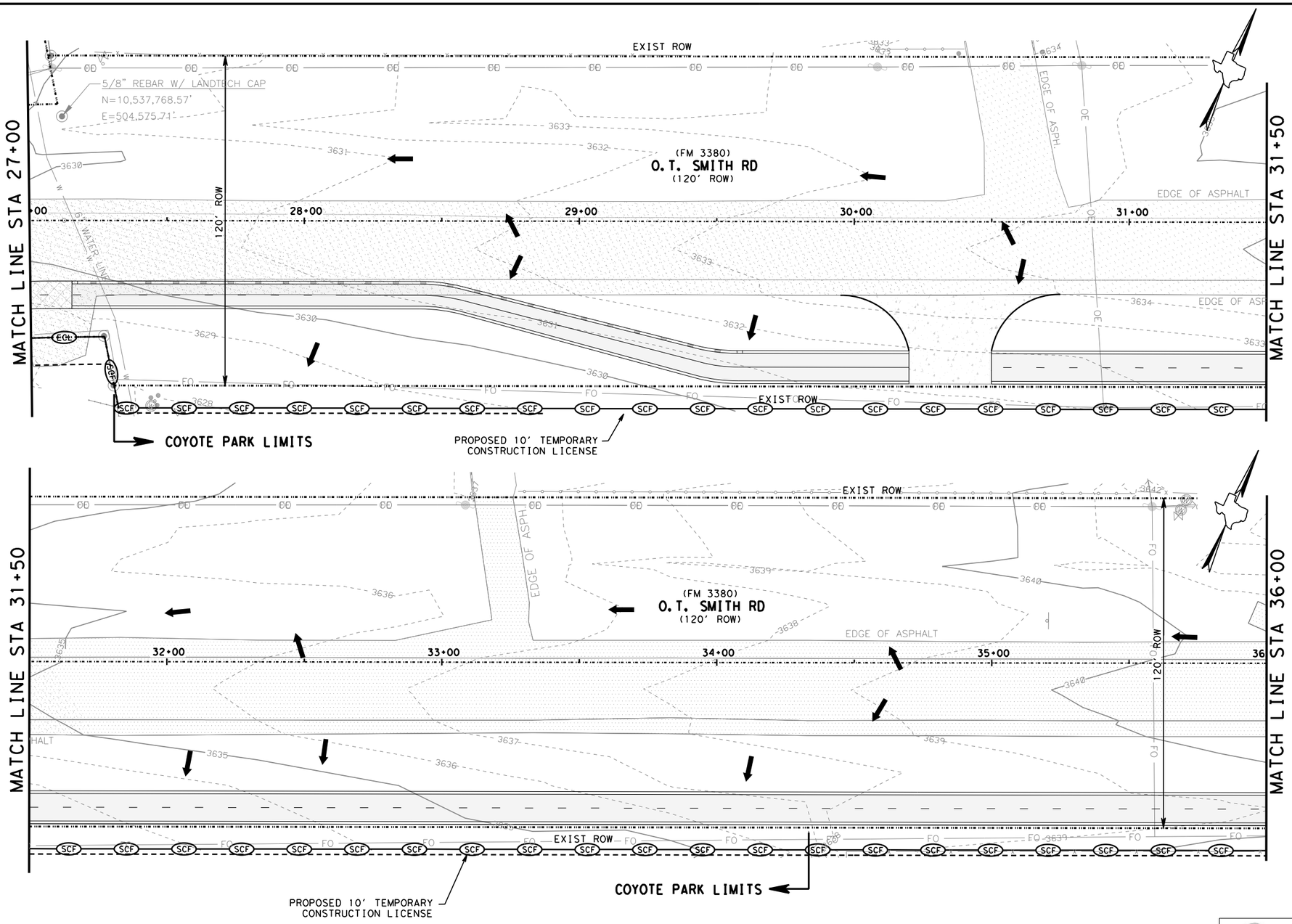

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	895
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	895
506	6042	BIODEG EROSN CONT LOGS (INSTL)(18")	LF	29
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	29

NOTES:

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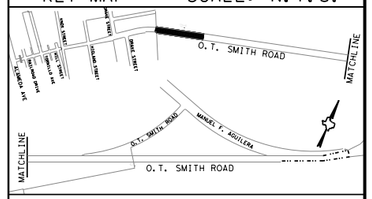
KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
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- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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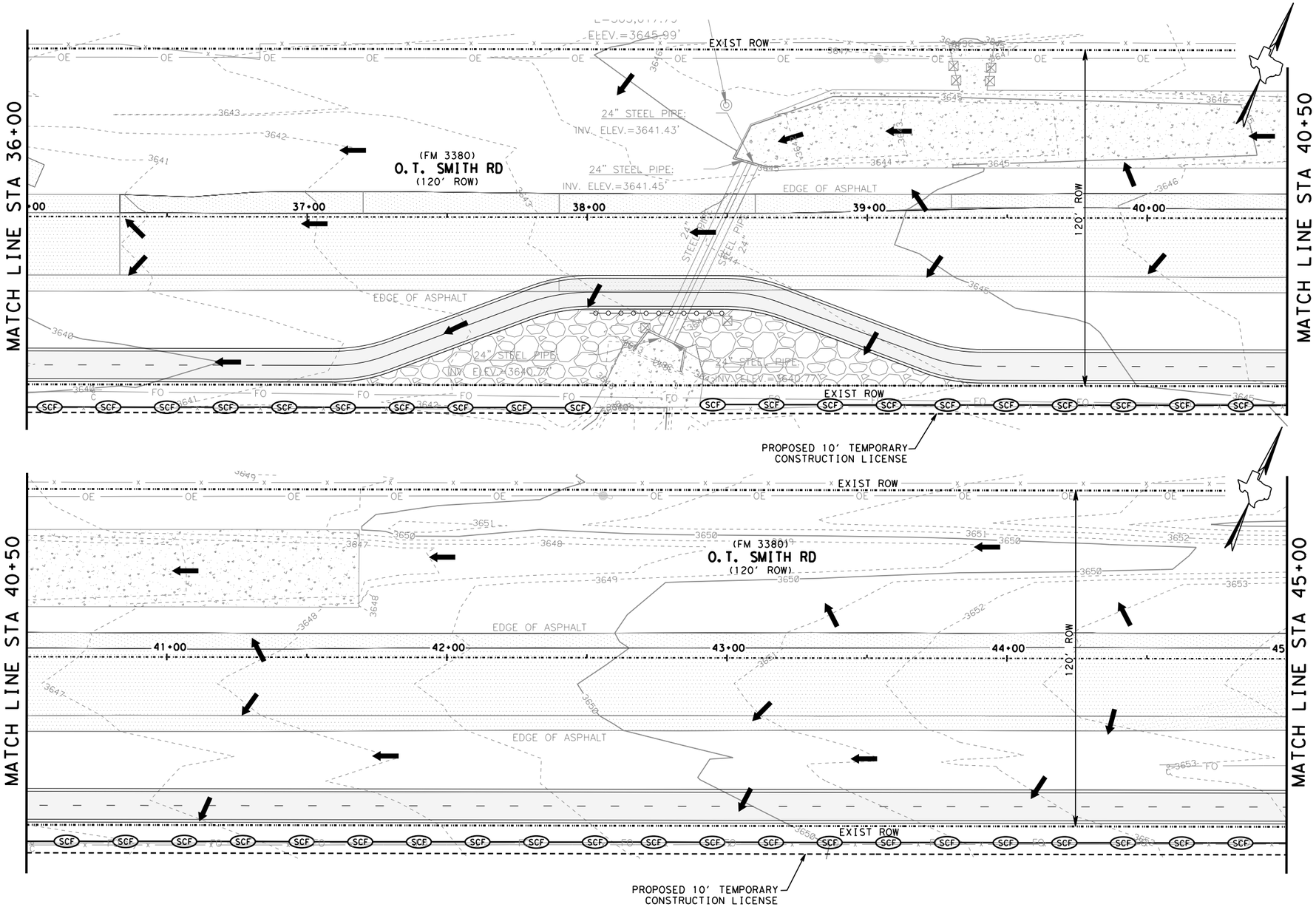
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

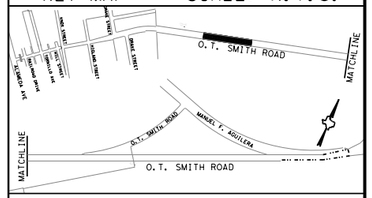
STA 27+00 TO STA 36+00

SHEET 4 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		168
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

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FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4,1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	112
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	112
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	860
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	860

NOTES:

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

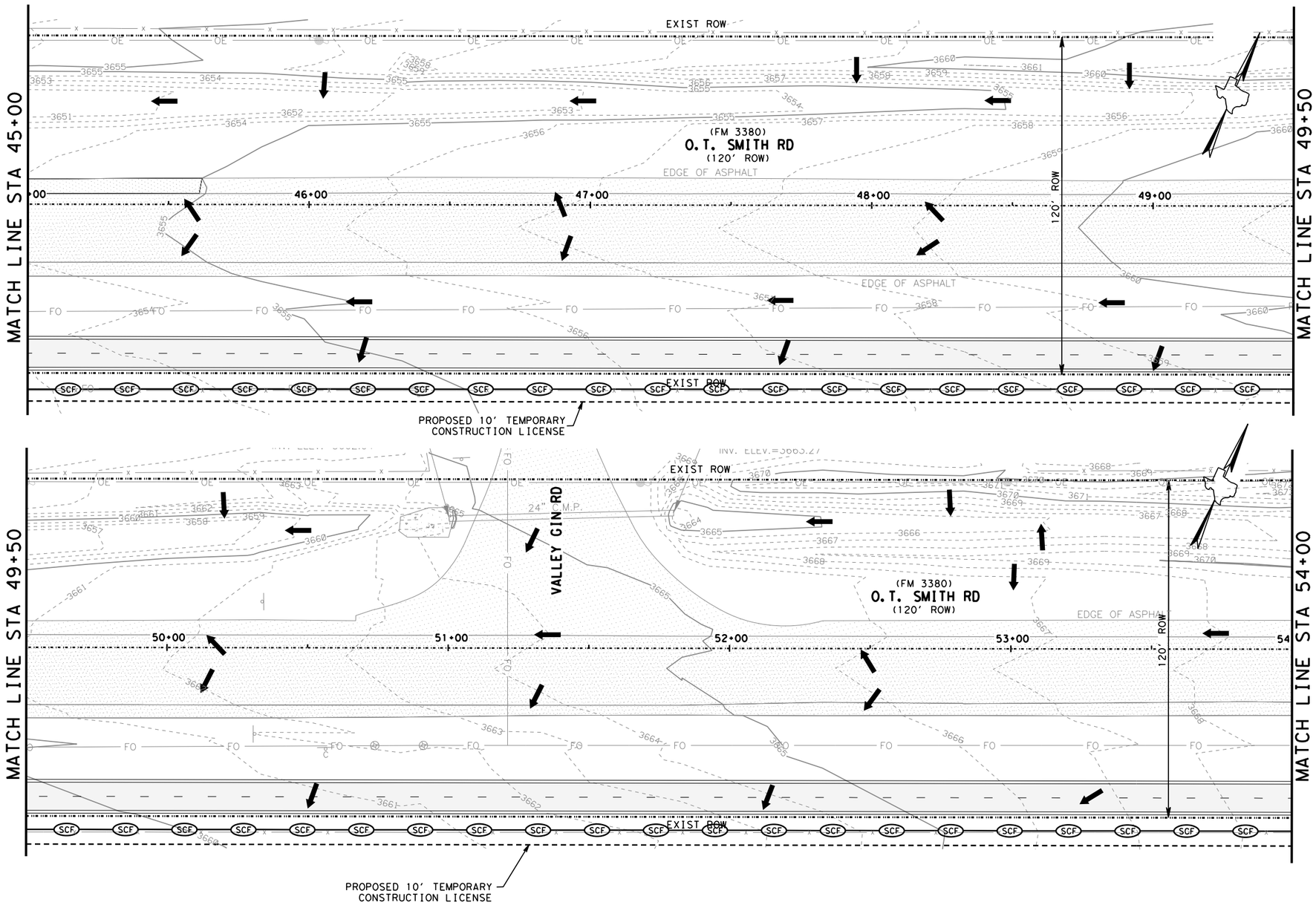
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

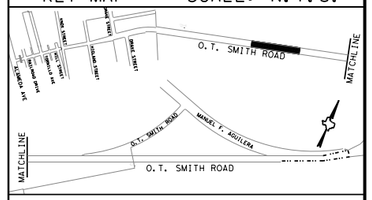
STA 36+00 TO STA 45+00

SHEET 5 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		169
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	900
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	900

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

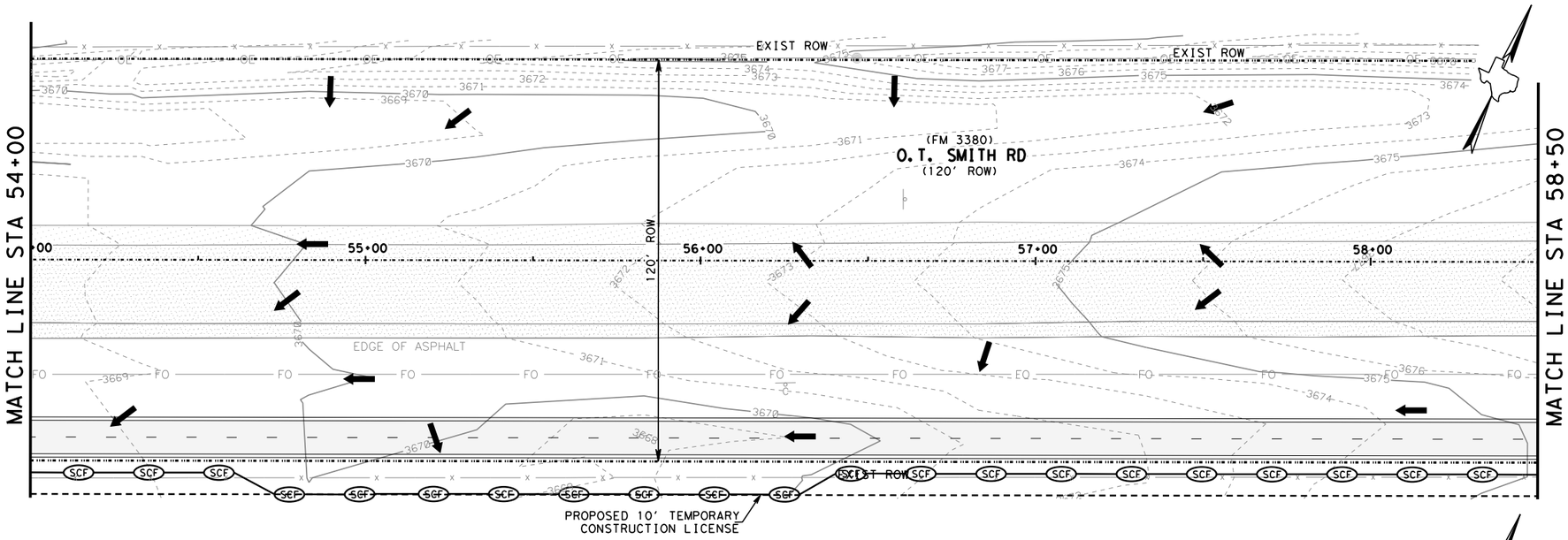
TORNILLO SHARED USE PATH

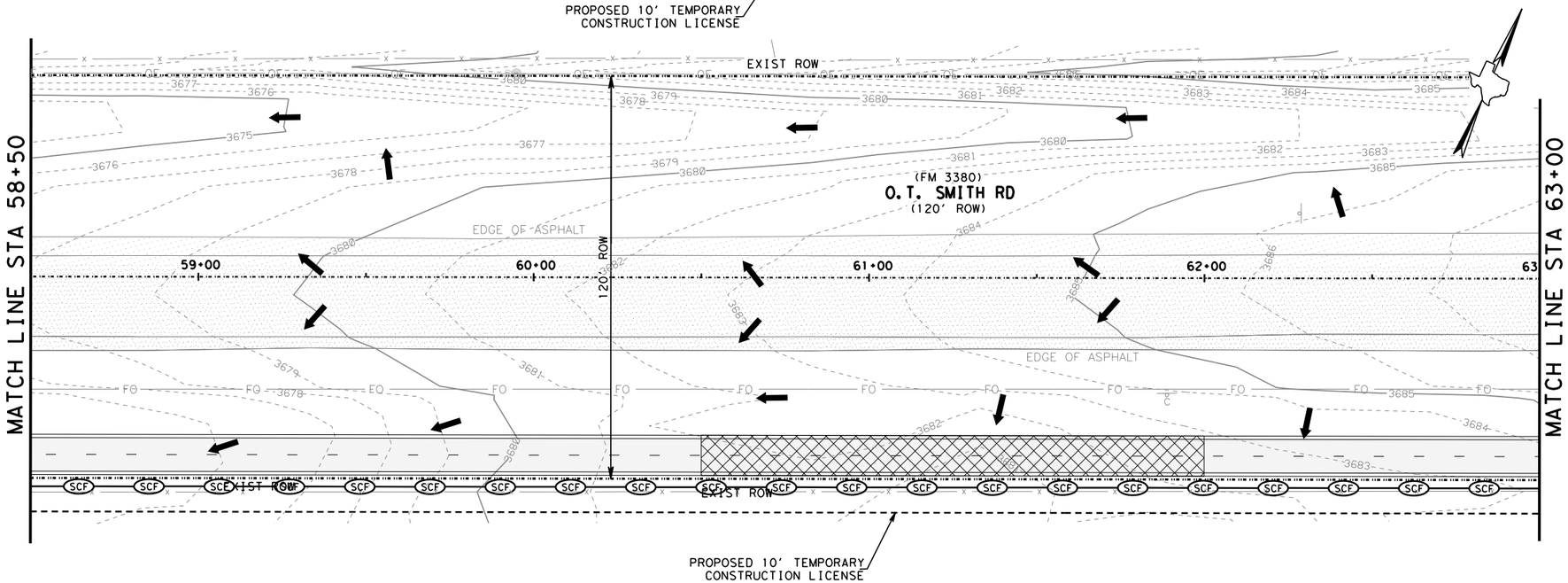
STORMWATER POLLUTION PREVENTION PLAN

STA 45+00 TO STA 54+00

SHEET 6 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		170
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS





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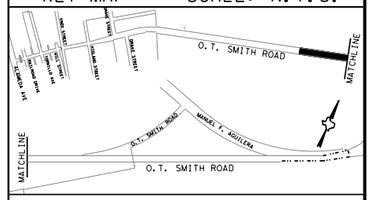


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	112
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	112
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	900
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	900

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

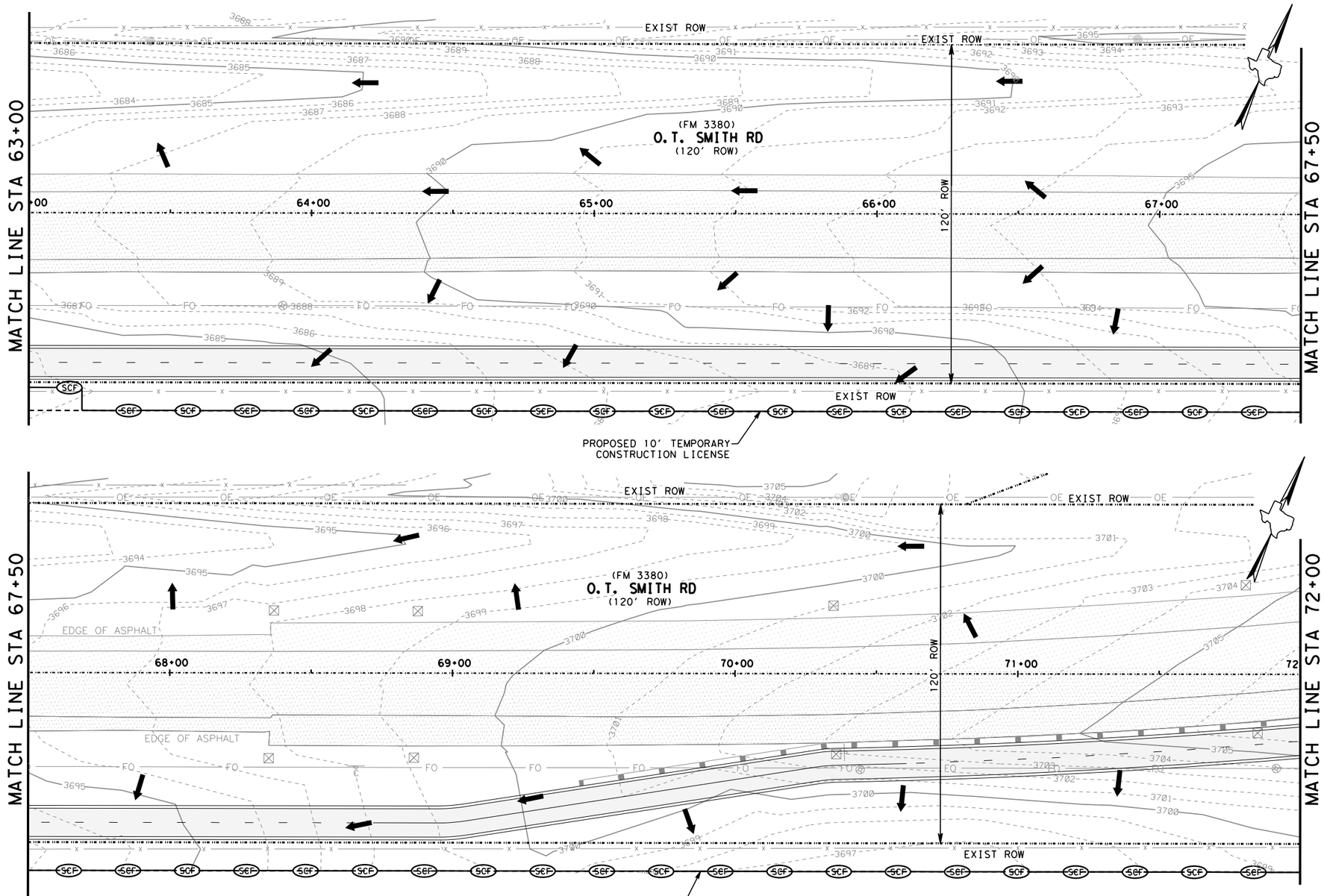
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

STA 54+00 TO STA 63+00

SHEET 7 OF 14

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		171
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



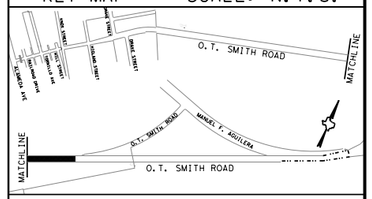
SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	900
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	900

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

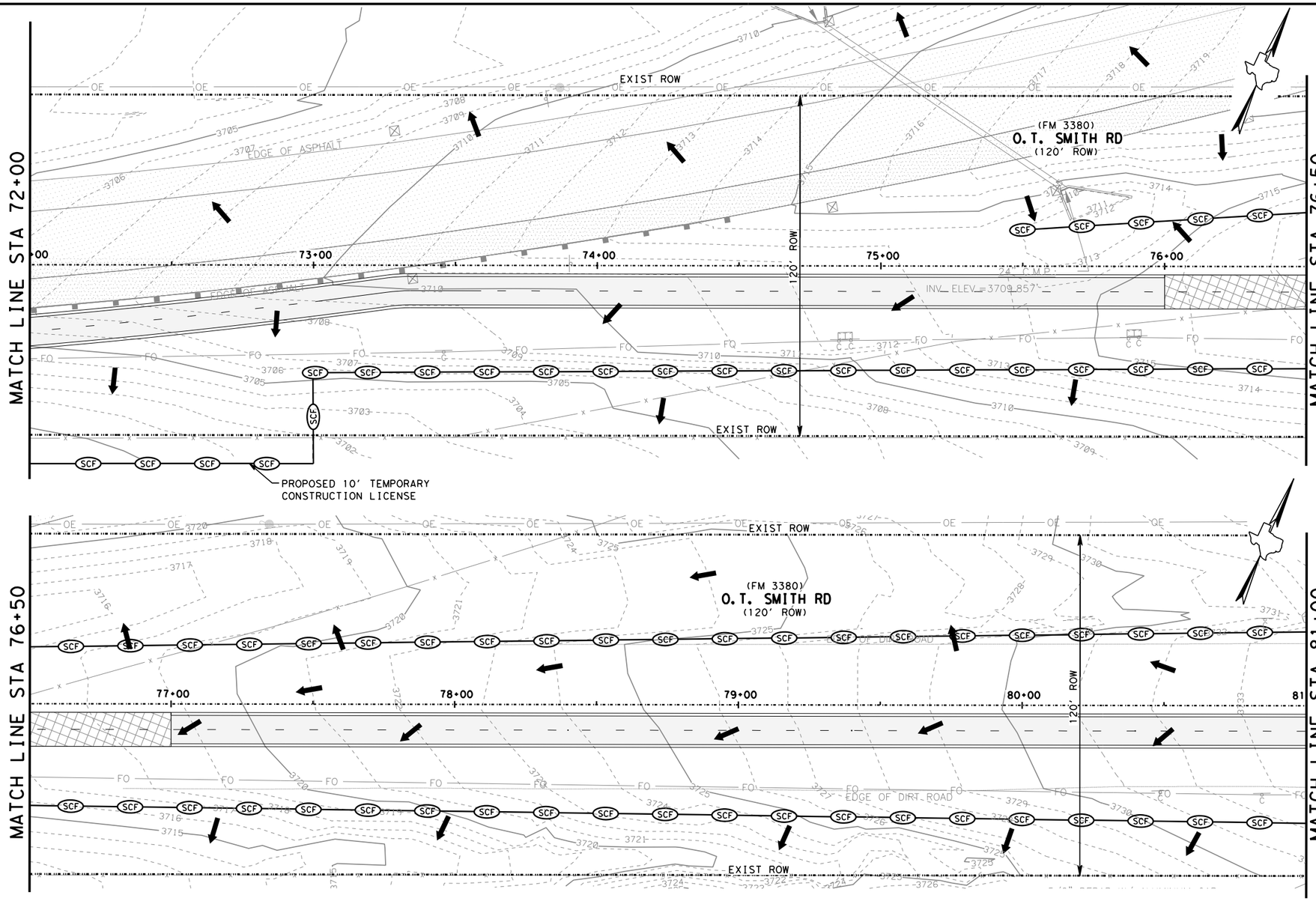
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

STA 63+00 TO STA 72+00

SHEET 8 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		172
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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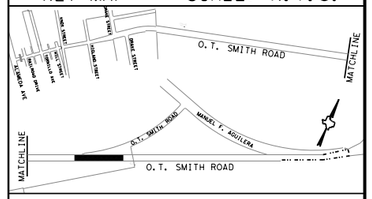


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	112
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	112
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1492
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1492

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

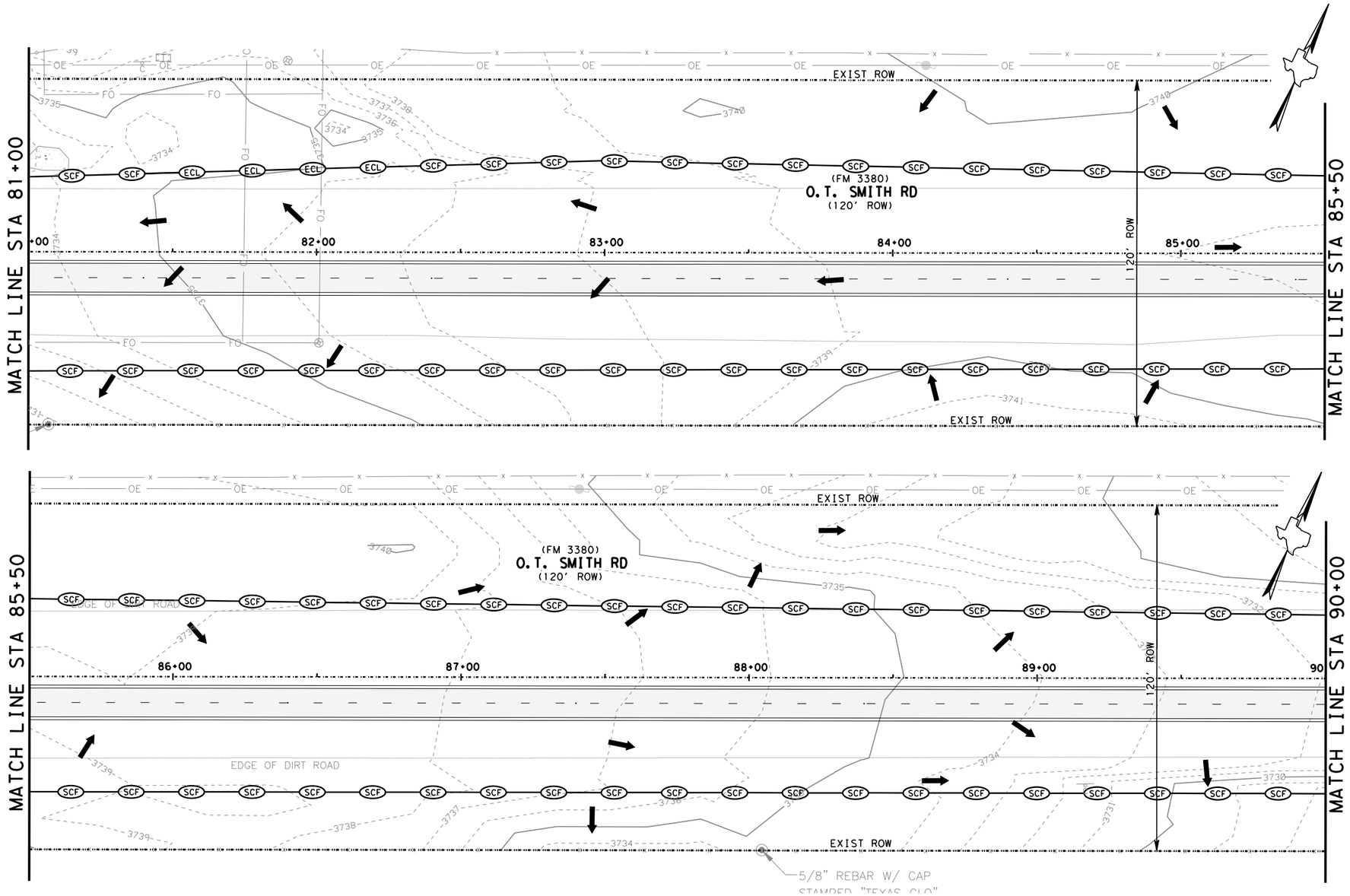
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

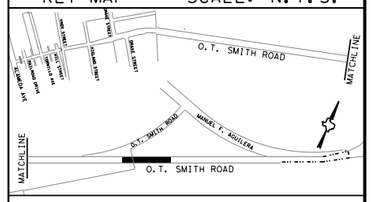
STA 72+00 TO STA 81+00

SHEET 9 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		173
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

STA 81+00 TO STA 90+00

SHEET 10 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		174
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1716
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1716
506	6042	BIODEG EROSN CONT LOGS (INSTL)(18")	LF	84
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	84

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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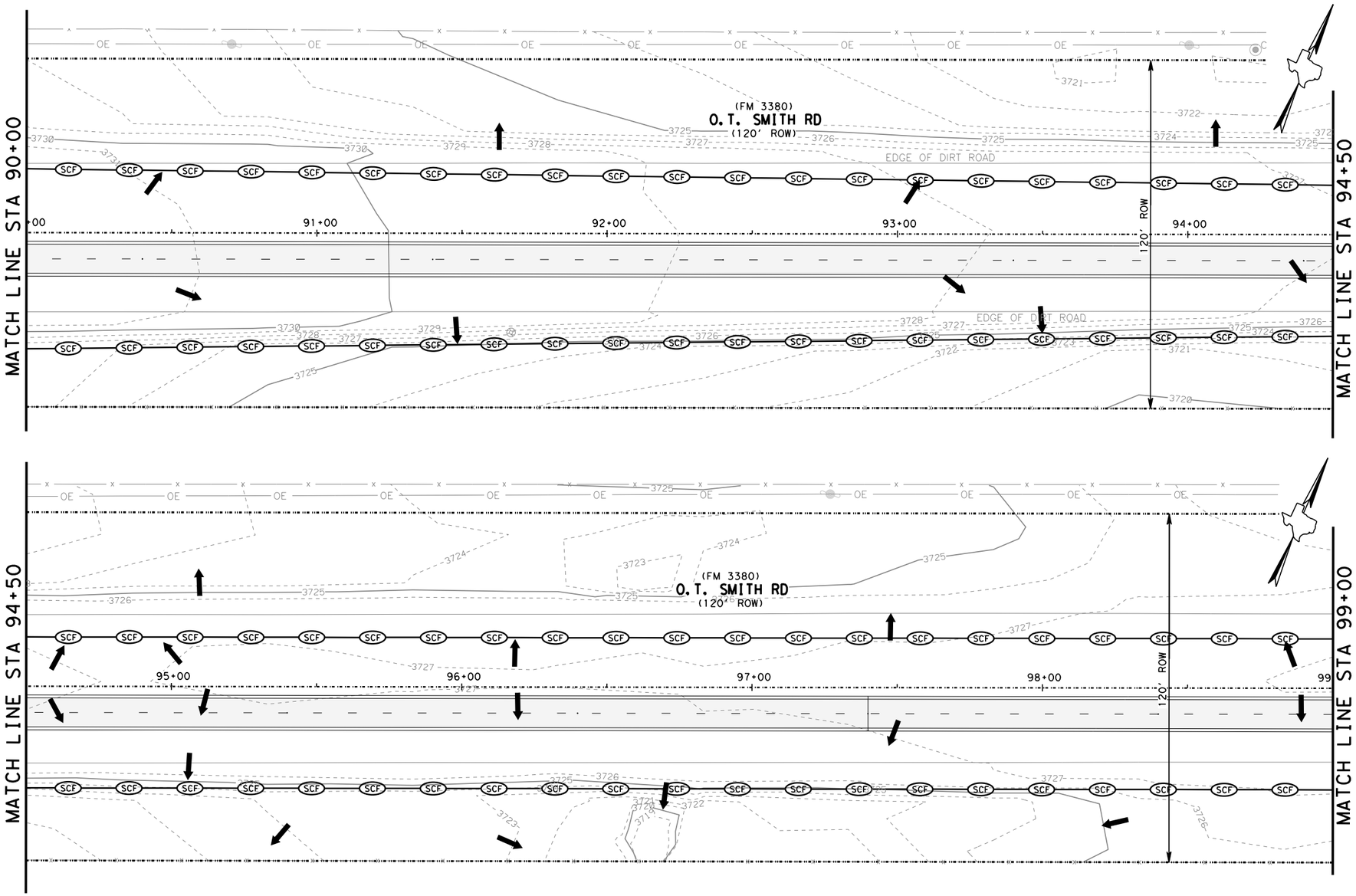

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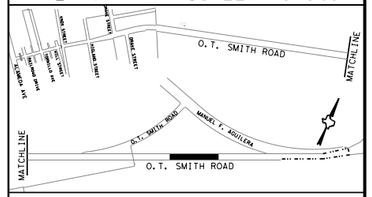

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B MAP REVISED: SEPTEMBER 4,1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1800
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1800

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

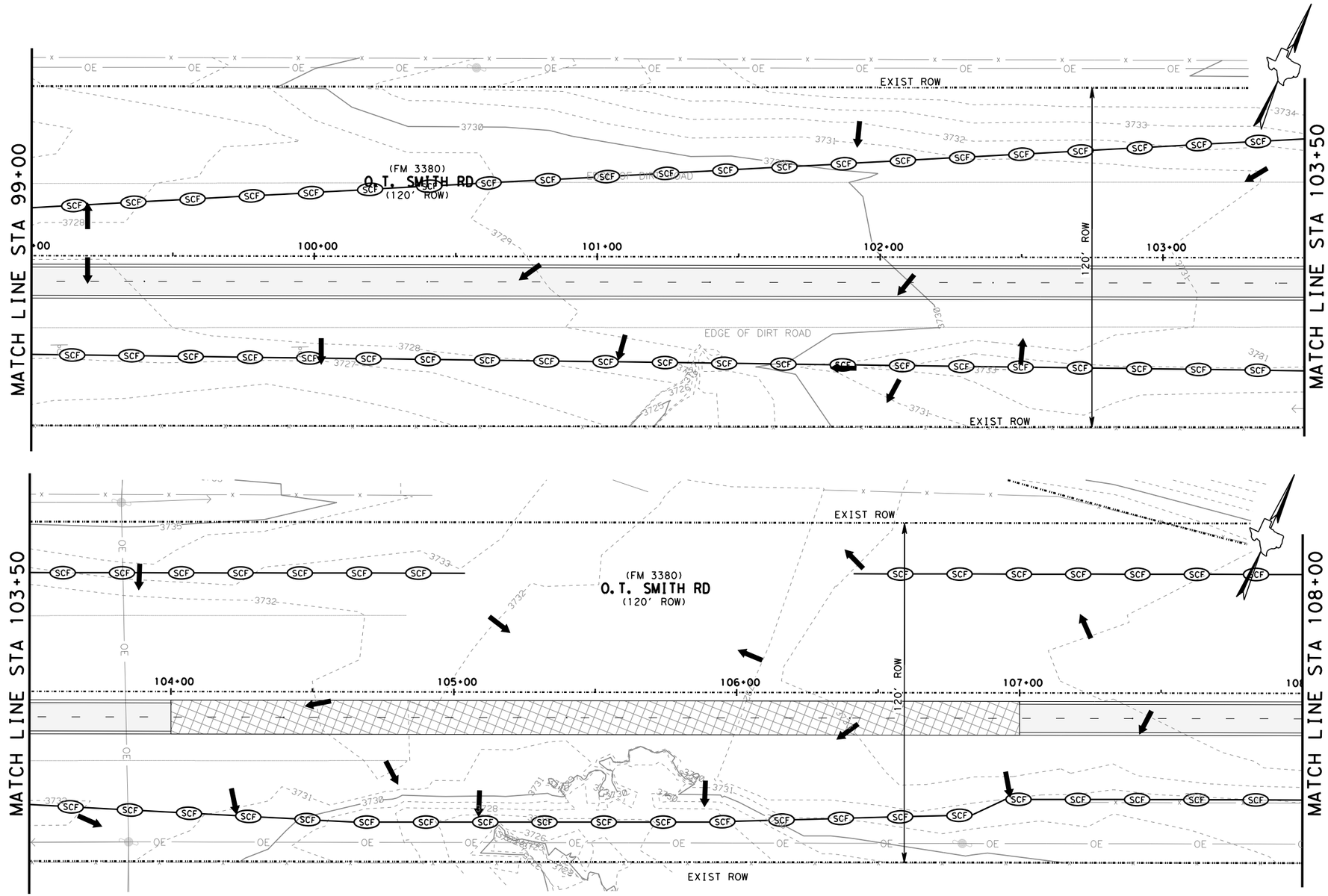
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

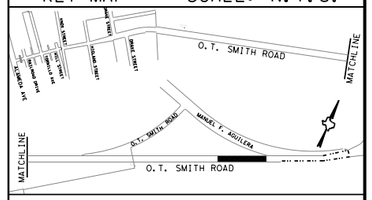
STA 90+00 TO STA 99+00

SHEET 11 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		175
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1664
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1664

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

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Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

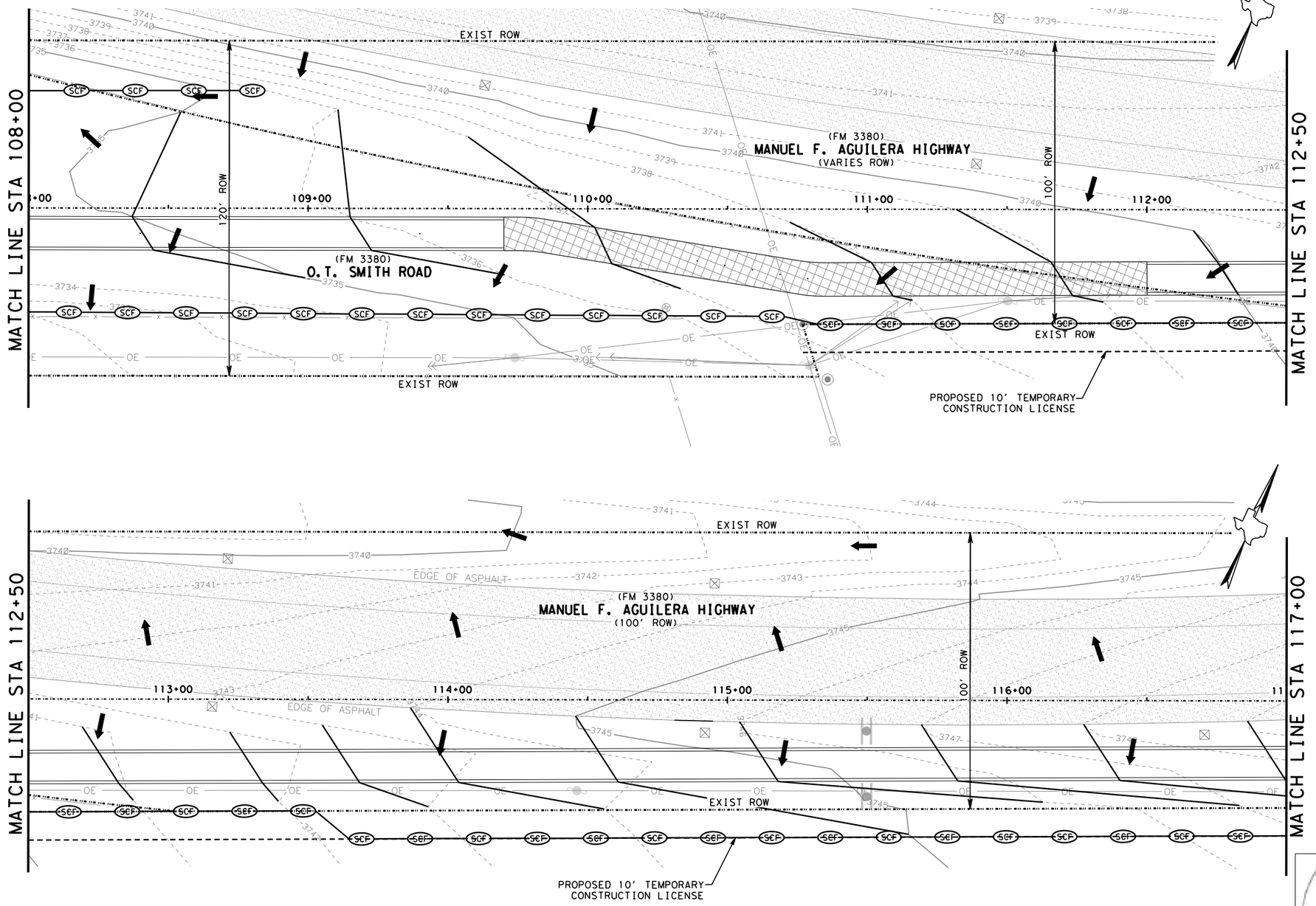
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

STA 99+00 TO STA 108+00

SHEET 12 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		176
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



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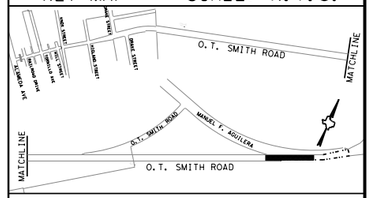

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4, 1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	112
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	112
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	985
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	985

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED PROFESSIONAL ENGINEER
5/30/19

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Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

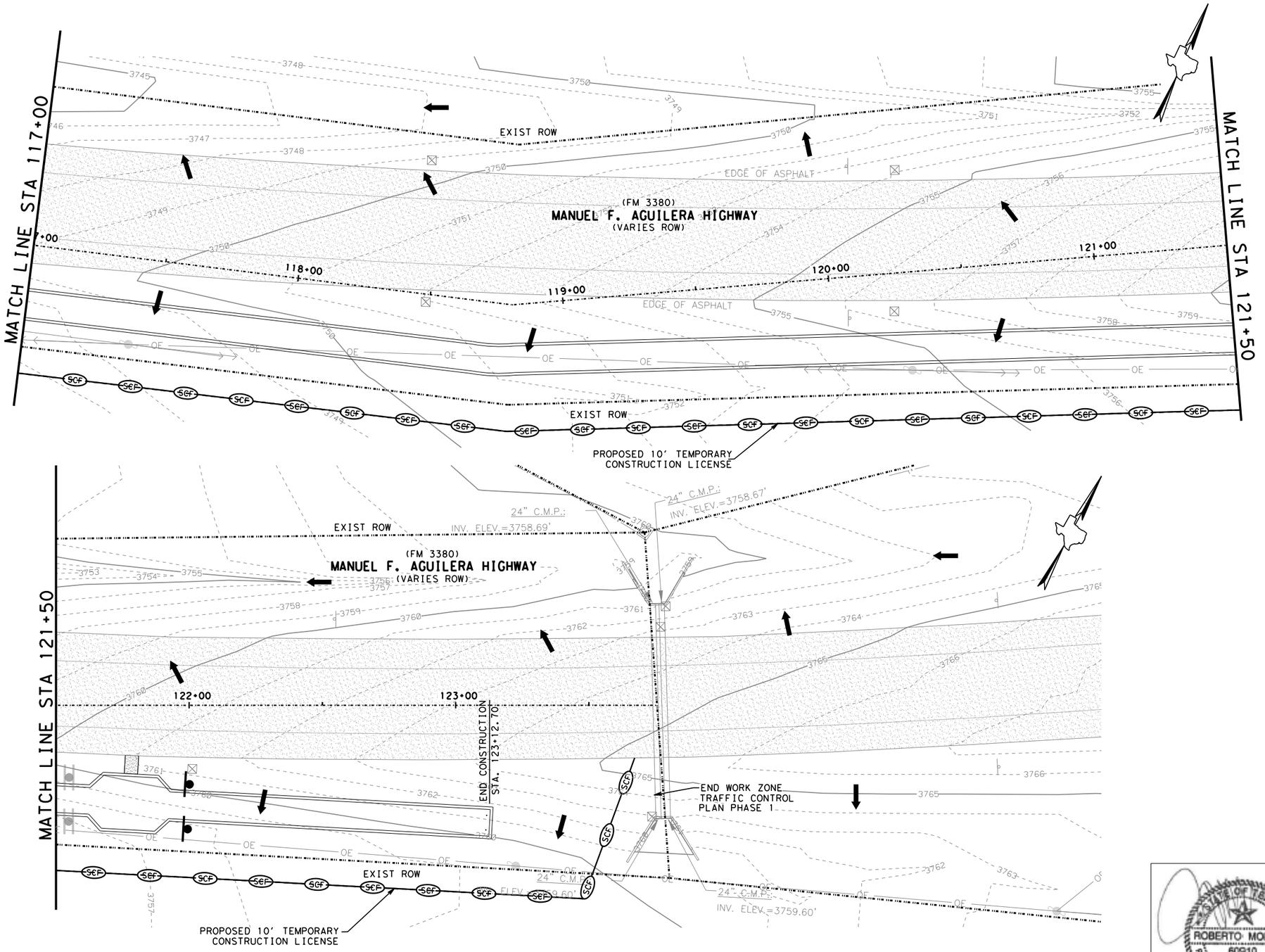
TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

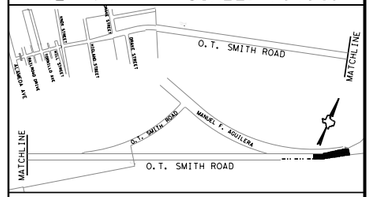
STA 108+00 TO STA 117+00

SHEET 13 OF 14

FED.RD. DIV.NO:	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		177
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS



KEY-MAP SCALE: N.T.S.



LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT CONTROL BASELINE
- TEMPORARY EROSION CONTROL LOGS (ECL)
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (TYPE I)
- PROPOSED PAVEMENT WIDENING/ REPLACEMENT
- PROPOSED SHARED PATH (CONCRETE)
- FLOW DIRECTION

FLOOD ZONE "X"

AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN

FIRM - FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 375 OF 375, COMMUNITY - PANEL NUMBER 480212 0375 B
MAP REVISED: SEPTEMBER 4,1991

0 20 40
SCALE: 1"=40'

SHEET TOTALS

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	112
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	112
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	725
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	725

NOTES:

1. REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASES/STAGES, AND COORDINATION OF CONSTRUCTION ENTRANCES/EXITS.
2. RECORD, UPDATE STORMWATER ACTIVITIES, AND IMPLEMENT BMPS AT ALL TIMES.
3. SEE GENERAL NOTES CONCERNING LOCATION OF CONSTRUCTION ENTRANCES AND EXITS

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

CAMINO REAL REGIONAL MOBILITY AUTHORITY

TORNILLO SHARED USE PATH

STORMWATER POLLUTION PREVENTION PLAN

STA 117+00 TO STA 123+12.70

SHEET 14 OF 14

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2019(961)TAPS		178
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

STORM WATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TPDES General Permit TXR150000. The operator, The Texas Department of Transportation ensures that: Project specifications provide that adequate BMPs have been developed for this project. The contractor shall be the party responsible for implementing the BMPs described herein. The contractor shall implement changes approved by the Project Engineer to the SWP3 within the times specified in the SWP3 or the TPDES General Permit. Operators affected by modifications to specifications will be notified in a timely manner.

1. SITE OR PROJECT DESCRIPTION:

NATURE OF THE CONSTRUCTION ACTIVITY: PEDESTRIAN AND BICYCLE FACILITY

POTENTIAL POLLUTANTS	AND	SOURCES:
Sediment laden storm water	-->	Storm water conveyance over disturbed areas
Fuels, oils, and lubricants	-->	Construction vehicles and storage areas
Constrction debris and waste	-->	Various construction activities
Trash		

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

1. Install traffic control devices.
2. Saw-cut small sections of existing ACP.
3. Construct ADA ramps, concrete curb and gutter, concrete driveways, acp, and asphalt trail with header curb as shown on plans.
4. Clean up project and remove traffic control devices from step #1 above.

AREAS:

TOTAL AREA OF PROJECT: 7.42+/- ACRES

TOTAL AREA OF SOIL DISTURBANCE: 7.42+/- ACRES

TOTAL AREA OFF-SITE:

WEIGHTED RUNOFF COEFFICIENT (BEFORE AND AFTER CONSTRUCTION): 0.50, 0.62

DATA DESCRIBING THE SOIL: GEOTECHNICAL REPORT PENDING

GENERAL LOCATION MAP: SEE TITLE SHEET

DETAILED SITE MAP: SEE TITLE SHEET

THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:

Concrete Batch Plant Facilities shall be located off-site

Asphalt Batch Plant Facilities shall be located off-site

NAME OF RECEIVING WATERS: Storm water runoff drains into adjacent properties where on-site pondingg occurs.

A COPY OF TPDES CGP TXR 150000 IS INCLUDED IN THE SWP3 FILE.

REMARKS:

401 WATER QUALITY CERTIFICATION: YES____ NO__X__

2. BEST MANAGEMENT PRACTICES (BMPs):

EROSION AND SEDIMENT CONTROLS: Erosion and sediment controls have been designed to retain sediment on-site. Controls shall be utilized to reduce off site transport of suspended sediments and pollutants if it is necessary to pump water from the site. Control measures shall be installed per specifications or as directed by the Project Engineer. Sediment must be removed from controls per the plan requirements or manufacturers recommendations, but no later than the time that design capacity has been reduced by 50%. If sediment escapes the site, accumulations will be removed to minimize further negative effects. Controls will be developed to limit the off site transportation of litter, construction debris, and construction materials.

INTERIM(INT), PERMANENT(PER), AND 401 CERTIFICATION BMP'S:

EROSION CONTROLS:	401	INT	PER
☐ Compaction & Tracking of slopes	__	__	__
☐ Diversion Dike	__	__	__
☒ Preserve Existing Vegetation	__	__	X
☐ Soil Stabilization	__	__	__
☐ Permanent Vegetation	__	__	__
☒ Erosion Control Logs	__	X	__
☐ No Erosion Controls are Required.			

SEDIMENT CONTROLS:	401	INT	PER
☒ Silt Fence	__	X	__
☐ Rock Berm	__	__	__
☐ Buffer Zones	__	__	__
☐ Vegetative Filter Strips	__	__	__
☒ Erosion Control Logs	__	X	__
☐ No Sediment Controls are Required.			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

- ☐ Vegetation Lined Drainage Ditch
- ☐ Retention/Irrigation
- ☐ Erosion Control Compost
- ☐ Grassy Swales
- ☐ Vegetative Filter Strips
- ☒ No Post Construction TSS Control Required.

The El Paso District of the Texas Department of Transportation uses Site-Manager, a computer based construction record-keeping system. Documentation describing major grading activities, temporary or permanent cessation of construction, and stabilization measures is a part of this system and is incorporated by reference into this SWPPP.

Stabilization measures must be initiated within 14 days when practicable in portions of the site where construction has temporarily or permanently ceased, if earth disturbing activities will not be resumed within 21 days.

3. STRUCTURAL CONTROL PRACTICES:

Structural control practices for this project are listed elsewhere herein.

4. PERMANENT STORM WATER CONTROLS:

Structural control practices installed during construction will be maintained and inspected after construction has ceased on the site and until final stabilization is attained. Unless specified in the plans, after project acceptance CEP will assume maintenance responsibilities for the controls and measures. Other permanent controls include existing and proposed; riprap at culvert inlets and outlets, diversion dikes, swales, retaining walls, and other similar devices.

5. OTHER CONTROLS:

OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST: The off site vehicle tracking of sediments shall be minimized by removal of excess dirt from the road and at entrances to the work site. The generation of dust will be minimized as directed by the Project Engineer by dampening haul roads and covering haul trucks with a tarpaulin.

CONSTRUCTION AND WASTE MATERIALS: The contractor will maintain a clean, orderly construction site. Construction waste including trash, rubble, scrap and vegetation shall be disposed of in lidded dumpsters or in a manner approved by the Project Engineer. Disposal methods must meet Federal, State, and Local waste management guidelines. No construction waste will be buried or burned on site. Spoils disposal, material storage, and materials resulting from the destruction of existing roads and structures shall be stored in areas designated by the Project Engineer and protected from run-off. All waterways shall be cleared of temporary embankment, temporary bridges, matting, false work, piling, debris, or other obstructions placed during construction operations, that are not part of the finished work, as soon as practicable. All excess soil generated by the construction will be collected and disposed of by the contractor. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body, or stream bed.

POLLUTANT SOURCES FROM AREAS OTHER THAN CONSTRUCTION: Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants. If potential pollutant sources are identified after the start of construction, controls and measures shall be implemented as directed by the Project Engineer.

5. OTHER CONTROLS (CONT):

DEDICATED ASPHALT PLANTS: Asphalt or asphaltic material for this project will be produced off site. If the project requires a dedicated asphalt plant and the plant within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer.

DEDICATED CONCRETE PLANTS: Cement or Concrete material for this project will be produced off site. If the project requires a dedicated concrete plant and the plant is within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer. Concrete trucks shall be wasted or washed out in locations designated by the Project Engineer. The locations shall be protected by a berm sufficient to contain all waste and wash water. Wash water shall not be allowed to enter any storm drainage system or waterway. The residual material and contaminated soil shall be collected and disposed of in accordance with Federal, State, and Local guidelines. Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants.

HAZARDOUS MATERIALS AND SPILL REPORTING: The contractor shall take appropriate measures to prevent, minimize, and control the spillage or leakage of hazardous materials and any associated wastes on site and in maintenance and staging areas. hazardous materials shall include but are not limited to paints, acids, solvents, asphalt products, chemical additives, curing compounds, oils, fuels, and lubricants. Hazardous materials shall not be stored, accumulated, or transported in open containers subject to precipitation or spillage, but shall be stored, accumulated, or transported in closed containers of the type recommended by the manufacturer. In the event of a spill the Project Engineer should be contacted immediately. All spills shall be immediately cleaned and any contaminated soil removed and disposed of in accordance with Local, State, and Federal laws. Fuel tanks shall be protected by a secondary containment, such as a lined berm, capable of containing 1.5 times the capacity of the tank, or as approved by the Project Engineer.

OFF SITE PSLs: All off site project specific locations including dedicated asphalt plants, concrete plants, or utility installations, required by the contractor, are the contractor's responsibility. The contractor shall secure all permits required by local, state, or federal laws for off site PSLs. The contractor shall provide diagrams and areas of disturbance for all PSL's within 1 mile of the project.

SANITARY FACILITIES: All sanitary or septic wastes that are generated onsite shall be treated and disposed of in accordance with state and local regulations. Raw sewage or septage shall not be discharged or buried on site. Precaution shall be taken to prevent illicit discharges to storm water. Licensed waste management contractors shall be required to dispose of sanitary waste. Porta johns will be required for the construction site or as directed by the Project Engineer.

VELOCITY DISSIPATION DEVICES: Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as shown in the plans or as directed by the Project Engineer to provide a non-erosive flow velocity from the structure to a watercourse so that the natural physical and biological characteristics and functions are maintained and protected.

6. APPROVED STATE AND LOCAL PLANS:

This SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or permits approved by federal, state, or local officials.

7. MAINTENANCE:

Control measures shall be properly installed according to specifications. If inspections or other information indicates a control has been installed, used, or is performing inadequately, the contractor must replace or modify the control as soon as practicable after discovery. Control measures shall be maintained in effective operating condition. If inspections determine that BMPs are not operating effectively maintenance will be performed as necessary to continue the effectiveness of the controls. Maintenance must be accomplished as soon as practicable. Controls adjacent to creeks, culverts, bridges, and water crossings shall have priority. Controls that have been disabled, run over, removed, or otherwise rendered ineffective must be corrected immediately upon discovery.

8. INSPECTION OF CONTROLS:

A CEP inspector will inspect disturbed areas of the site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion controls measures identified in the SWP3 will be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site will be inspected for evidence of off-site vehicle tracking. Inspections will be conducted every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. The SWP3 will be modified based on the result of these inspections. Revisions will be completed within 7 Calendar days following the inspection. Revised implementation schedules will be described in the SWP3 and implemented as soon as practicable. Rain gauges will be maintained on site for the duration of the project. Reports summarizing the scope of the inspections are included in the SWP3 file.

9. NON-STORM WATER COMPONENTS:

The contractor shall be required to implement appropriate pollution prevention controls and measures for all eligible non-storm water components of the discharge as approved and directed by the Project Engineer.

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SWP3)

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			179
STATE	STATE DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
0924	06	560	CS

REV: 04-2006

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1. **Texas Department of Transportation**

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☒ Erosion Control Logs	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☒ No Action Required ☐ Required Action

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☐ No Action Required ☒ Required Action

Best management practices (BMPs) would be in place to further reduce potential impacts. These BMPs include:

Migratory Birds:

1. Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season. (February 1 to November 1)
2. Avoid the removal of unoccupied, inactive nests, as practicable.
3. Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
4. Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
5. Prior to construction, perform daytime surveys for nests, including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be removed.

Terrestrial Reptiles:

1. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible because of site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
2. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
3. Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
4. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
5. Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
6. In addition to general Terrestrial Reptile BMPs, contractors will be advised to avoid harvester ant mounds in the selection of PSLs where feasible for the Texas horned lizard.

Vegetation:

1. Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable. WHerever practicable, impacted vegetation should be replaced with in-kind on-site replacement/restoration of native vegatation.
2. To minimize adverse effects, activities should be planned to preserve mature trees, particularly acorn, nut, or berry producting varieties.
3. It is strongly recommended that trees greater than 12 inches in dbh that are removed be replaced. TPWD's experience indicates that for ecologically effective replacement, a ratio of three trees for every one lost should be provided to the extent practicable either on-side or off-site. Trees less than 12 inches dbh should be replaced at a one to one ratio.
4. Replacement trees should be of equal or better wildlife quality than those removed and be regionally adapted, native species.
5. When trees are planted, a maintenance plan that ensures at least an 85 percent survival rate after three years should be developed for the replacement trees.
6. The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.
7. The use of seed mix that contains seeds from only locally adapted native species is recommended.
8. Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☒ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Environmental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corps of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

STATE OF TEXAS
ROBERTO MORENO
60910
LICENSED
PROFESSIONAL ENGINEER
5/30/19

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ROBERTO MORENO, P.E. 60910, ON 05-30-2019

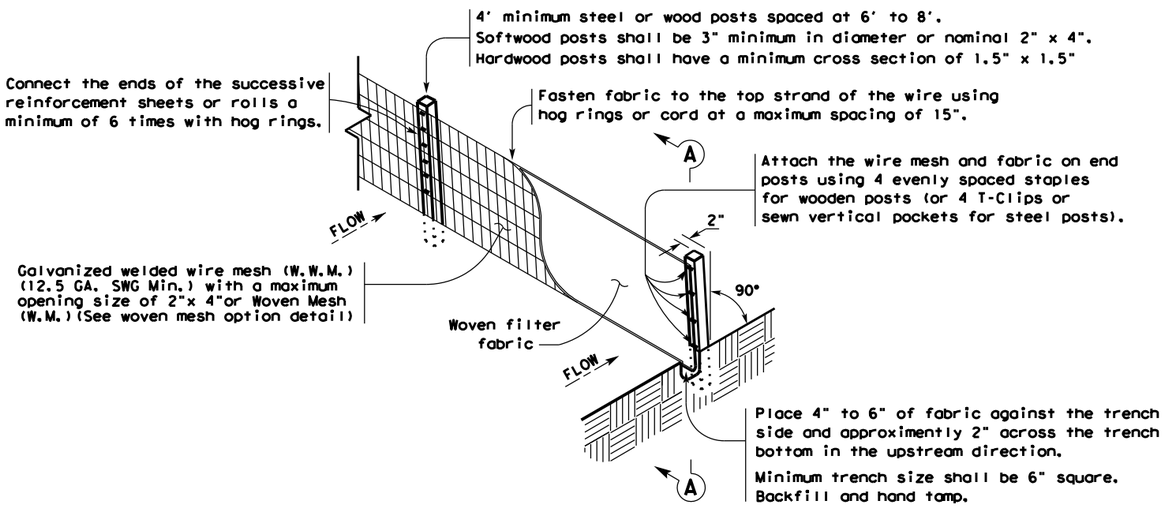
Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

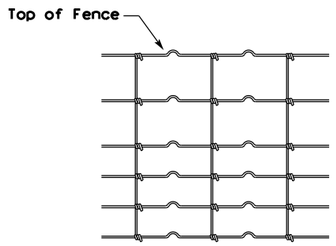
EPIC

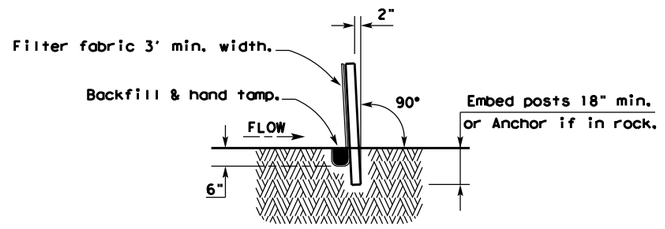
FILE: epic.dgn	DN: TxDOT	CK: AM	DW: VP	CK: AR
©TxDOT February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.
05-07-14 ADDED NOTE SECTION IV.	ELP	EL PASO		180
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.				



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

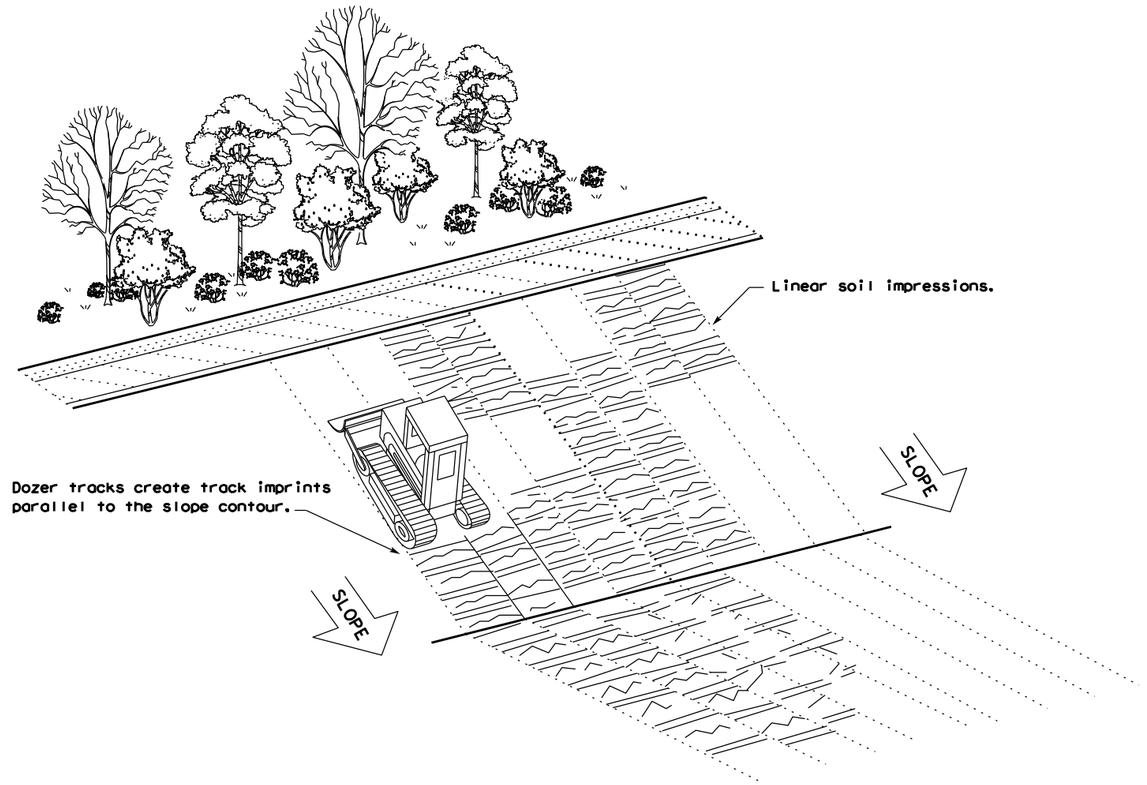
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0924	06	560		CS	
	DIST	COUNTY			SHEET NO.	
	ELP	EL PASO			181	

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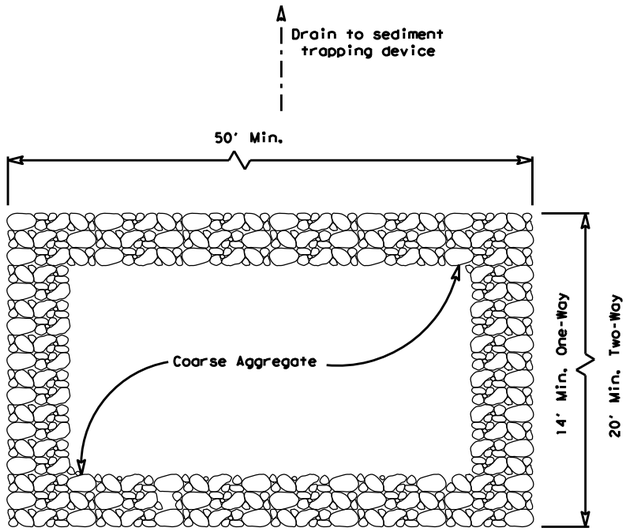
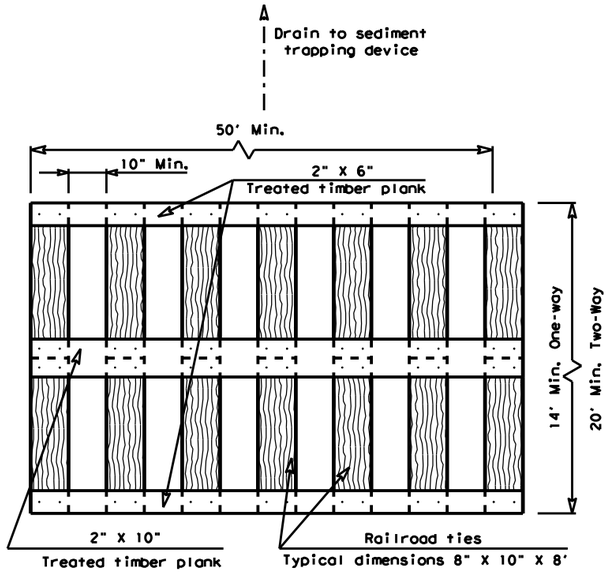
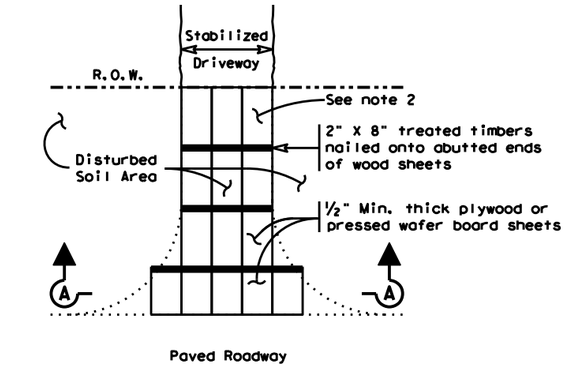


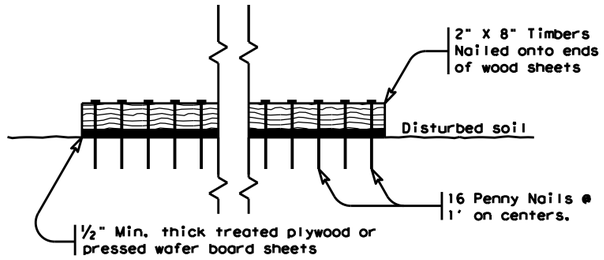
PLAN VIEW



PLAN VIEW



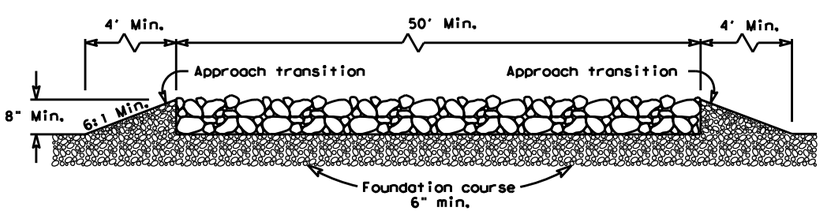
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

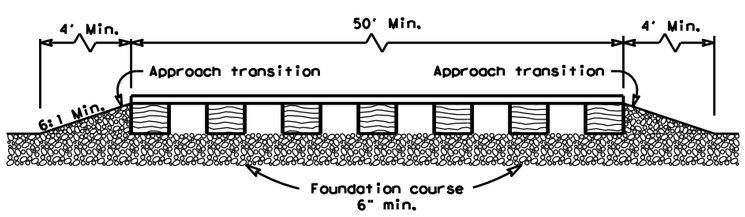
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

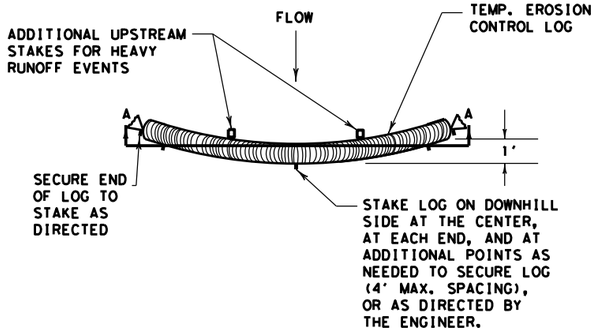
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

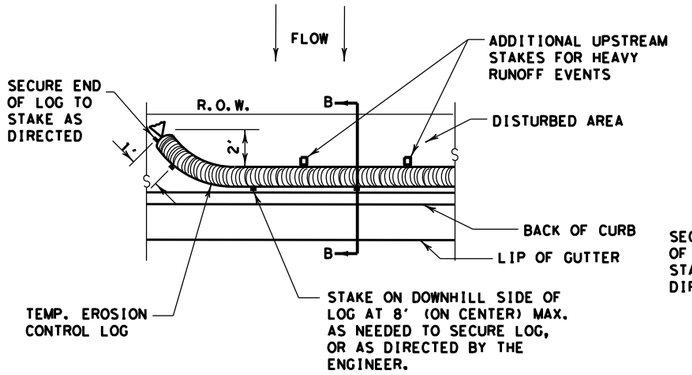
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0924	06	560	CS
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		182

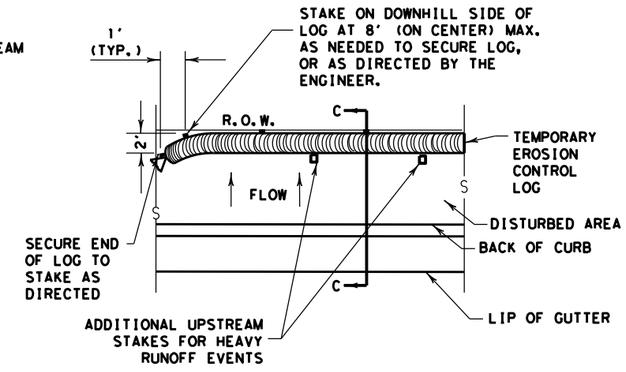
DATE: $DATE$
FILE: $FILE$



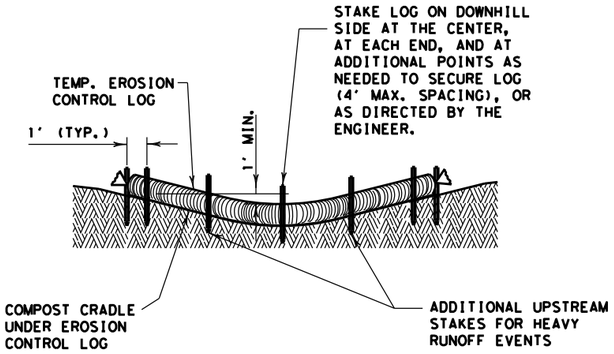
PLAN VIEW



PLAN VIEW



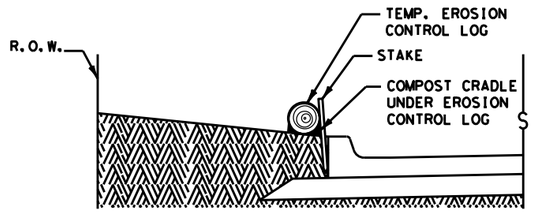
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

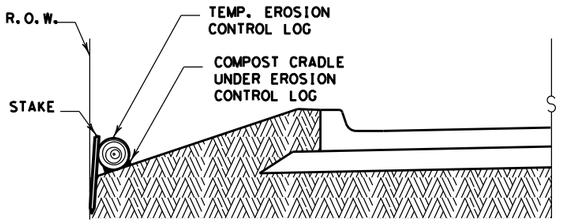
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

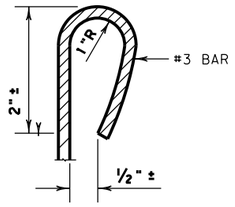
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

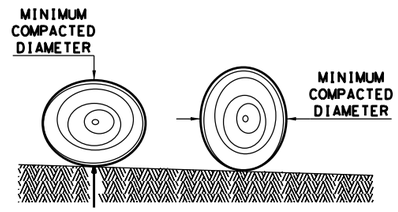
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

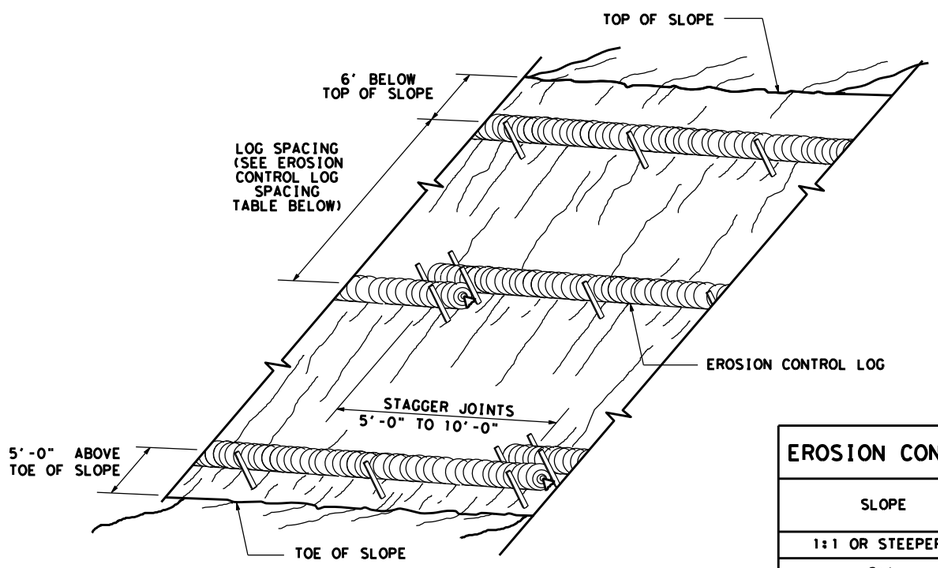
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

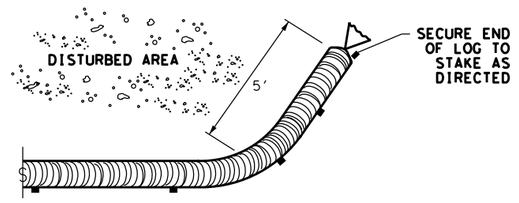
FILE: ec916		DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0924	06	560		CS	
		DIST	COUNTY			SHEET NO.	
		ELP	EL PASO			183	

DATE: $DATE$
FILE: $FILE$



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

CL-SST

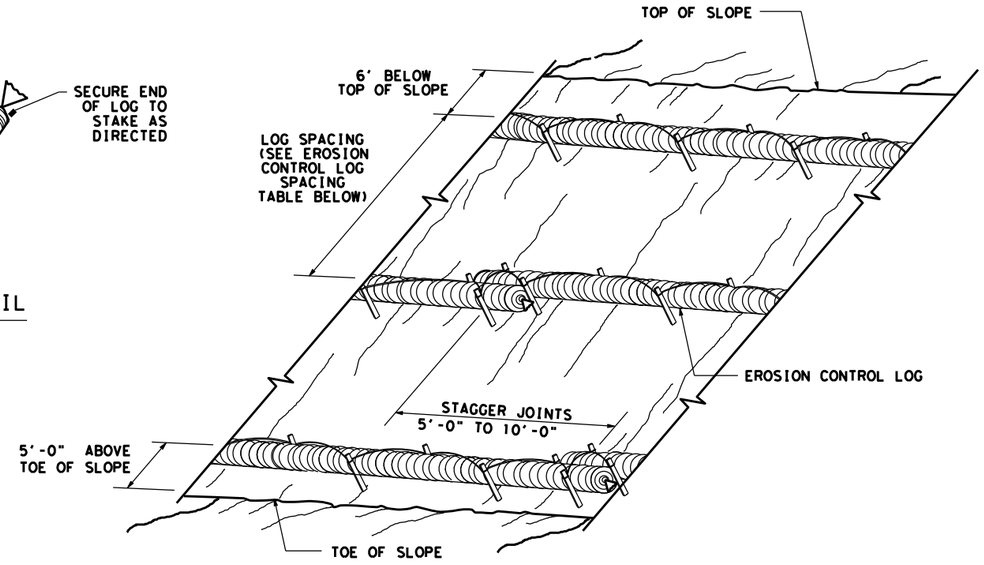


END SECTION RAP DETAIL

EROSION CONTROL LOG SPACING TABLE

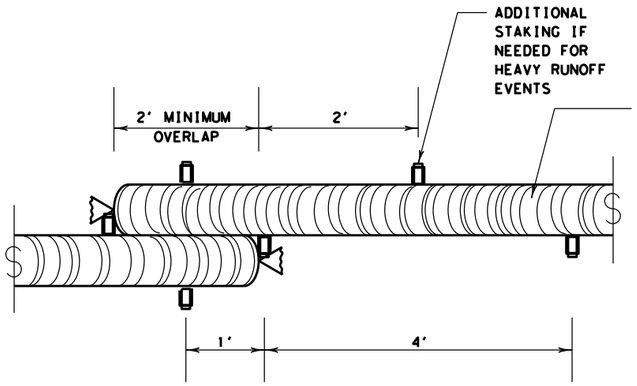
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

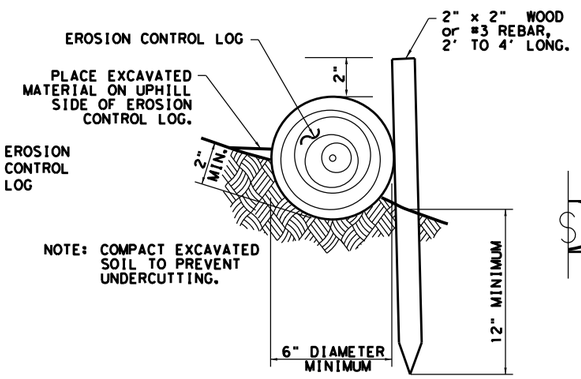
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL



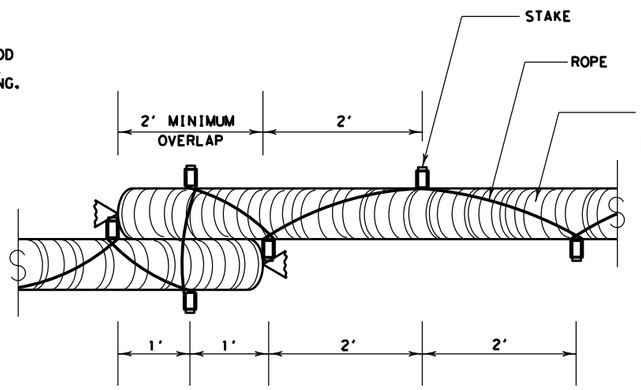


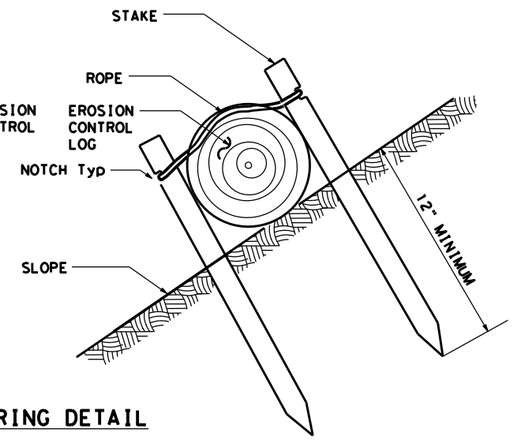
STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

TRENCH DEPTH TABLE

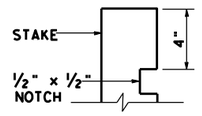
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0924	06	560	CS	
	DIST	COUNTY		SHEET NO.	
	ELP	EL PASO		184	

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