

SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: BR 2023(245)

CONTROL: 0233-05-038

COUNTY: CULBERSON

LETTING: 11/03/2022

REFERENCE NO: 1027

PROPOSAL ADDENDUMS

- X PROPOSAL COVER
- X BID INSERTS (SH. NO.: ALL))
- X GENERAL NOTES (SH. NO.: A, D, G-I, M AND P)

- _ SPEC LIST (SH. NO.:)
- _ SPECIAL PROVISIONS:)
- _ ADDED:

DELETED:

- _ SPECIAL SPECIFICATIONS:
- ADDED:

DELETED:

- X OTHER: PLAN SHEETD AND OTHER CHANGES

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

***** PROPOSAL COVER*****
REVISED CONTRACT TO 211 WORKING DAYS

***** BID INSERTS *****

ALL BID INSERT PROPOSAL SHEETS AND E&Q PLAN SHEETS 8, AND 8A ARE REPLACED AS PART OF THIS ADDENDUM.

REVISED QUANTITIES FOR THE FOLLOWING BID ITEMS: 110-6001, 110-6003, 132-6002, 247-6121, 407-6006, 502-6001, 506-6020, 506-6024, 508-6001, 512-6009, 512-6057, 540-6001, 542-6001, 544-6001, 662-6063, 662-6095, 677-6001, 3076-6026

ADDED THE FOLLOWING BID ITEMS: 275-6001

DELETED THE FOLLOWING BID ITEMS: 400-6005, 403-6001

***** PROPOSAL GENERAL NOTES *****
DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

(CONTINUED)

SHEET A: ADDED ITEM 275 AND REVISED RATE TO ITEM 247 ON TABLE 2.

SHEET D: REVISED ITEM 8 TO WORKING DAYS AS "STANDARD WORKWEEK".

SHEET G: ADDED ITEM 275 "CEMENT TREATMENT (ROAD MIXED)" NOTE.

SHEET H AND I: REVISED ITEM 420 AND 421 TO LIST ELEMENTS FOR HIGH PERFORMANCE CONCRETE AND EPOXY COATED REINFORCEMENT.

SHEET M: REVISED ITEM 585 TO USE SURFACE TEST TYPE B.

SHEET P: REVISED TO REMOVE THE TITLES - TABLE 5 AND TABLE 6 FROM CHARTS.

***** PLAN SHEETS *****

SHEETS 7, 7A, 7C, 7D, 7F AND 7G (GENERAL NOTES): REFER TO GENERAL NOTES CHANGES AS NOTED ABOVE.

SHEETS 8 AND 8A (ESTIMATE & QUANTITY SHEETS): REVISED SHEETS AS NOTED ABOVE IN BID INSERTS.

SHEETS 9 - 12 AND 14: REVISED QUANTITIES, ADDED ITEM 275-6001 AND DELETED ITEMS 400-6005, 403-6001.

SHEET 15: REVISED TCP PHASES AND TCP SELECTION TABLE

SHEETS 16 - 25 AND 27: REVISED DUE TO CONSOLIDATING THE TCP PHASING AND THE ELONGATION OF THE TCP DETOUR.

SHEET 21A: SHEET ADDED DUE TO ELONGATION OF THE TCP DETOUR.

SHEET 28 AND 29: SHEETS OMITTED DUE TO CONSOLIDATING THE TCP PHASING.

SHEET 30: REVISED TO REMOVE SUBSIDIARY TO PAY ITEM NOTE.

SHEET 86-89: REVISED QUANTITY FOR ITEM 407-6006.

SHEET 92: REVISED NOTE EXPANSION BOARD INCIDENTAL TO ITEM 432.

SHEET 93: REVISED TO ADD NOTE ON THE TYPE OF EMBANKMENT.

SHEET 101: REVISED SHEET NOTE 8 TO LIST ELEMENTS FOR EPOXY COATED REINFORCEMENT STEEL.

SHEETS 103 AND 104: REVISED MATERIAL NOTE 2 TO REMOVE THE USE OF EPOXY COATED REINFORCING STEEL.

SHEETS 106, 107, AND 108: REVISED TO REMOVE EPOXY COATED REINFORCING STEEL LANGUAGE. SHEET NO LONGER A MODIFIED STANDARD.

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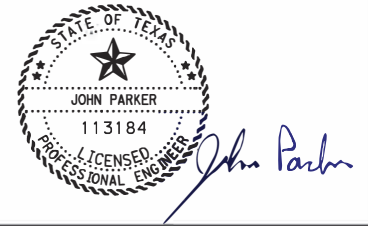
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THE STANDARD SHEETS SPECIFICALLY IDENTIFIED "*" HAVE BEEN SELECTED BY ME OR UNDER MY SUPERVISION AND ARE APPLICABLE TO THE PROJECT.



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SH 54 @ DIABLO CREEK

INDEX OF SHEETS

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		0233	05	038	SH 54

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REVISED, 10/26/2022

10/26/2022

General Notes:

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

**Table 1
Compaction Requirements for Subgrade and Base Courses**

Item	Description	Outside Roadway Course Density
132 ^{1,2,3}	EMBANKMENT (FINAL)(DENSITY CONTROL) (TY A)	(See Below)

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

**Table 2
Basis of Estimate**

Item	Description	Rate
247	FLBS (RDWY DEL) (TY A GR 1-2)	135 LBS/CF
275	CEMENT	2% by Unit Weight 2.2 lb/cu ft
310	PRIME COAT (MULTI OPTION)	0.20 gal/sq. yd
3076	DENSE GRADED HOT MIX ASPHALT TACK COAT (TRAIL)	1 in. = 110 lb/sq. yd. 0.15 GAL/SY

1. Deviation from the rates shown shall require approval.

General Requirements

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. This work will be subsidiary to the various bid items.

General Project Description – This project consists of the construction of a new bridge structure over Diablo Creek in Culberson County. The project includes approach work. Blading hours have been established on the project for cleaning channel in the event of large flood events during construction. These items will be used at the discretion of the Engineer. Refer to General Geotechnical Subsurface Soils Characterization Evaluation Report for SH 54 Diablo Creek New Bridge Construction Project, prepared by CQC for this project.

It is required for Contractors to become familiar with project site prior to submitting bids.

Where nighttime work is approved, provide adequate lighting for the entire work site as directed. This will be considered subsidiary to the various bid items.

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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. Any proposed changes to the TCP must be signed and sealed by a Professional Engineer in the State of Texas, and the original sealing Engineer must be informed of the changes. For any and all TCP changes requested by the Contractor, the Contractor must indicate how the proposed changes will affect subsequent construction phases of the project, and also must indicate any impacts the proposed TCP changes will have on the overall project safety and completions. All costs of preparing TCP changes will be the Contractor's responsibility.

Contractor questions on this project are to be addressed to the following individual(s):

Christopher Weber, PE

Alpine Area Engineer

Christopher.Weber@txdot.gov

Aldo Madrid, PE

Director of Construction

Aldo.Madrid@txdot.gov

Monica Ruiz, PE

District Const. Engineer

Monica.Ruiz@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals.

All contractor questions will be reviewed by the Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address:

<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting Responses/>

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

Item 4 – Scope of Work

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

Repair any existing pavement, utilities, structures, etc., damaged as a result of construction operations, at no additional cost to the Department.

Item 5 – Control of the Work

The Department will furnish horizontal and vertical reference points. Contractor must verify horizontal and vertical reference points with conventional survey methods before proceeding with construction activities. Verification must be submitted for review and approval to the Department's R.P.L.S. prior to start of construction. Any discrepancies not reported will be at no additional cost to the Department.

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Plan datum for this project is NAD 83 for horizontal and NAVD 88 for elevation based. Electronic earthwork cross sections are available upon request, at bidding Contractor's expense, at the Area Engineer's office.

Keep traveled surfaces used in hauling operations clear and free of dirt or other material. Existing pavement, utilities, structures, etc. damaged because of the operations will be repaired at no additional cost to the Department.

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.

Precast Alternate Proposals.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at <https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design>

Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Item 6 – Control of Materials

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

The Buy America Material Classification Sheet is located at the below link. <https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html>.

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Item 7 – Legal Relations and Responsibilities

Comply with all requirements of the Environmental Permits Issues and Commitments (EPIC) Sheet.

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.

Roadway closures during the following key dates and/or special events are prohibited unless approved in writing by the Engineer:

No closures will be permitted the week of Thanksgiving.

No closures will be permitted from Christmas Eve to New Year's Day.

No closures will be permitted from Good Friday to Easter Sunday.

No closures will be permitted the Saturday and Sunday before Memorial Day and Labor Day.

No closures will be permitted on Saturday or Sunday when July 4th falls on a Friday or Monday.

No closures will be permitted during weekday peak hours and legal holidays.

Nighttime is considered from 9 P.M. to 5 A.M. during weekdays, not including Fridays.

Coordinate with Engineer for scheduled nighttime work at least 48 hours in advance.

Law Enforcement Personnel

Submit charge summary and invoices using the Department forms.

Patrol vehicles must be clearly marked to correspond with the officer's agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site.

Item 8 – Prosecution and Progress

Working days will be calculated in accordance with Section 8.3.1.4., "Standard Workweek."

Create and Maintain a Critical Path Method (CPM) Schedule.

Submit baseline schedule and obtain approval prior to beginning construction. The monthly progress payment will be held if the monthly update is not submitted.

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Item 247 – Flexible Base

A 20-ton vibratory pad foot roller will be required for compaction of lifts 10 inches or greater, unless otherwise directed by the Engineer.

When requested, stake with blue tops at 100-foot intervals, the lines, and grade shown in the plans. (For Item 247.4)

Provide flexible base that does not exceed a sulfate content of 1,000 ppm when tested in accordance with Tex-145-E. The sulfate concentration of water used for compaction shall not exceed 2,000 ppm.

Item 275 – Cement Treatment (Road-Mixed)

Provide Type II cement at the rates shown on the plans or as directed by the Engineer.

Microcracking will be required in accordance with Item 275.4.7

If prime coat will not be placed within 7 days, asphalt shall be used for curing

Item 310 – Prime Coat

Cure prime coat for at least 48 hr. prior to beginning hot-mix asphalt placement operations, unless otherwise directed.

When multi option is allowed, provide AE-P, SS-1H or CSS-1H.

Contractor to provide a test sample of prime coat to the engineer prior to production. Material must be tested and approved by the engineer prior to application.

Place seal coat or pavement course as shown on the plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor's expense.

Item 354 – Planing and Texturing Pavement

When a bridge deck is planed and textured, remove excess material. Do not broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints, rails on bridge, and all railroad tracks encountered as approved by the engineer. Clean all of these features if they weren't properly protected. This work is subsidiary work to applicable bid items. Refer to Item 438, "Cleaning and Sealing Joints," for procedures and methods.

The Department will retain ownership of planed materials. The asphalt removed under this item shall be salvaged and stockpiled in separate stockpiles as directed by the Engineer at the following location:

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Approximately 2 miles north of the project limits.

Contact the Van Horn Maintenance Supervisor at (432) 283-2501 for coordination prior to delivery of materials. Stack in piles 12 to 13 feet maximum height. Place silt fence along the perimeter of stockpiled material. Silt fence will be paid under Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls". Final quantity of silt fence to be approved by the engineer prior to stockpiling. Hauling of material and incidentals to complete this work is subsidiary to this Item.

Item 400 – Excavation and Backfill for Structures

The trench bottom for pre-cast concrete pipe will not require undercutting, use flowable backfill, unless otherwise directed.

Item 416 – Drilled Shaft Foundations

Stake all foundation locations for approval by the Engineer prior to commencement of drilling operations. 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.

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

Item 420 – Concrete Substructures

Provide High Performance Concrete (HPC) for all elements listed below:

- Bridge Abutments, Bridge Bent Caps, and Bridge Columns

Provide Epoxy Coated Reinforcement Steel for all element listed below:

- Bridge Bent Caps

Item 422 – Concrete Superstructures

Provide High Performance Concrete (HPC) for all elements listed below:

- Bridge Slab, Approach Slab, and Bridge Railing,

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Provide Epoxy Coated Reinforcement Steel for all elements listed below:

- Bridge Slab and Bridge Railing

Item 432 – Riprap

Wire mesh and fibers for concrete not allowed on this project for this Item. Reinforce all concrete riprap using bar reinforcement conforming to Item 440, "Reinforcement for Concrete," as shown on the plans, or as directed.

Finish concrete riprap with a smooth (wood float) finish, unless otherwise directed. Obtain approval for all stone riprap material sources.

Item 442 – Metal for Structures

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

Item 502 – Barricades, Signs, and Traffic Handling

Prior to beginning construction, the Engineer shall approve the routing of traffic and sequence of work.

Additional signs and barricades, placed as directed, shall be considered subsidiary to this Item. 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 3 for Department approved Training.

**Table 3
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	Design and Operation of Work Zone Traffic Control	1 day	Both courses are required to meet minimum required training.
	133113	Work Zone Traffic Control for Maintenance Operations	1 day	
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 4 for Department approved training.

**Table 4
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	16 minutes	Videos available through AGC of Texas offices. English & Spanish
		Highway Construction Work Zone Hazards	18 minutes	
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

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functional as long as possible to accept storm water as part of the Storm Water Pollution Prevention Plan (SWP3), as directed.

Grading operations will be limited to the catch point of the proposed cross-section. Preserve any vegetation outside these limits.

Erosion Control Contingency

A contractor Force Account "Erosion Control Contingency" has been established for this project. It is intended to be utilized for Erosion Control cleanup, in the event of storm events flooding the on-site detours, work zone or affecting the construction area, or any nature event that could not be foreseen during the project planning or design stages. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on timeline of the events. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancements.

Item 508 – Constructing Detours

The project requires on-site detours to remain within the existing ROW. Please follow grades and lane dimensions as shown on the plans. Follow all TxDOT Specifications for the construction of such detours. Cross Sections are available for information.

Temporary pavement utilized under this item shall be delivered to the Maintenance yard after use.

Item 585 – Ride Quality for Pavement Surfaces

Use Surface Test Type B to govern ride quality for finished riding surfaces of travel lanes. Notify the District Laboratory 48 hours prior to conducting Surface Test Type B. Properly mark all starting/ending points, and leave-out sections prior to testing. Deliver test results within 24 hours of testing. Provide all profile measurements in electronic data to ELP-LAB@txdot.gov using the format specified in Tex-1001-S.

"Payment Adjustment, Schedule 2" will be used for the travel lanes.

An IRI > 95 will require corrective action.

Use diamond grinding or equivalent to correct areas of localized roughness. For flexible pavements, use CSS-1H emulsion to fog seal the corrected areas.

Milling will not be allowed as a corrective action for excessive deviations in the surface layer of hot mix.

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:

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- 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 precoated 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 Department.

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

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

All signs removed will remain property of the Contractor.

Item 658 – Delineator and Object Marker Assemblies

Verify all locations with the Engineer prior to installation.

Removal and proper disposal of all existing delineators, object markers, and any non-standard hardware assemblies are not paid directly, but will be considered subsidiary to pertinent items for payment.

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.

Remove and properly dispose of tabs upon completion of the final striping. This work is considered subsidiary to various bid items.

Place tabs as per the Department's Standard sheet TCP (7-1)-13. Place raised pavement markers in accordance with applicable standards and as directed.

Item 666 – Retroreflectorized Pavement Markings

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

Air blasting is required as pavement surface preparation.

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.

Item 672 – Raised Pavement Markers

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

Air blasting is required for pavement surface preparation.

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

Do not place raised pavement markers when the pavement surface temperature is below 60°F. Removal of all existing raised pavement markers will be considered subsidiary to the various bid items.

Item 6001 – Portable Changeable Message Sign

Provide messages as directed by the Engineer.

Provide three (3) Portable Changeable Message Signs (PCMS) as advanced notification for two weeks prior to beginning project and throughout duration of project as directed. One of the Three (3) will be spare and used as directed by the Engineer.

Item 6185 – Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

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.

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.

Contractor shall be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

The supporting vehicle for the TMA shall have a minimum gross (i.e., ballasted) vehicular weight of 19,000 pounds.

Basis of Estimate for Stationary TMAs				
Phase	Standard	Required	Additional	TOTAL
1,2	TCP (2-1)	4		4
ALL	Line Diagram	2	1(Spare)	3

Basis of Estimate for Mobile TMAs			
Standard	Required	Additional	TOTAL
TCP (S-2)	1		1
TCP (3-1)	4		4
TCP (3-3)	2		2



CONTROLLING PROJECT ID 0233-05-038

DISTRICT El Paso
HIGHWAY SH 54

COUNTY Culberson

Estimate & Quantity Sheet

CONTROL SECTION JOB				0233-05-038		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00183066			
COUNTY				Culberson			
HIGHWAY				SH 54			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	100-6001	PREPARING ROW	AC	5.000		5.000	
	105-6043	REMOVING STAB BASE & ASPH PAV (0-6")	SY	4,500.000		4,500.000	
	110-6001	EXCAVATION (ROADWAY)	CY	3,438.000		3,438.000	
	110-6003	EXCAVATION (SPECIAL)	CY	6,627.000		6,627.000	
	132-6002	EMBANKMENT (FINAL)(DENS CONT)(TY A)	CY	10,313.000		10,313.000	
	132-6056	EMBANKMENT (FINAL)(ORD COMP)(TY C2)(DS)	CY	78.000		78.000	
	216-6001	PROOF ROLLING	HR	40.000		40.000	
	247-6121	FL BS (RDWY DEL) (TY A GR 1-2)	TON	2,988.000		2,988.000	
	275-6001	CEMENT	TON	30.000		30.000	
	275-6019	CEMENT TREAT (SUBGRADE)(6")	SY	5,201.000		5,201.000	
	310-6001	PRIME COAT (MULTI OPTION)	GAL	780.000		780.000	
	354-6002	PLAN & TEXT ASPH CONC PAV(0" TO 2")	SY	1,728.000		1,728.000	
	407-6006	SHEET PILING (PZ - 40)	SF	14,530.000		14,530.000	
	416-6001	DRILL SHAFT (18 IN)	LF	130.000		130.000	
	416-6004	DRILL SHAFT (36 IN)	LF	410.000		410.000	
	420-6014	CL C CONC (ABUT)(HPC)	CY	48.900		48.900	
	420-6030	CL C CONC (CAP)(HPC)	CY	31.800		31.800	
	420-6038	CL C CONC (COLUMN)(HPC)	CY	8.800		8.800	
	420-6156	CL C CONC (WEBWALL)	CY	9.400		9.400	
	422-6002	REINF CONC SLAB (HPC)	SF	8,160.000		8,160.000	
	422-6016	APPROACH SLAB (HPC)	CY	62.400		62.400	
	425-6036	PRESTR CONC GIRDER (TX34)	LF	953.920		953.920	
	432-6010	RIPRAP (CONC)(CL B)(5 IN)	CY	77.000		77.000	
	432-6046	RIPRAP (MOW STRIP)(5 IN)	CY	91.000		91.000	
	450-6111	RAIL (TY SSTR) (W/DRAIN SLOT) (HPC)	LF	536.000		536.000	
	454-6020	SEALED EXPANSION JOINT (4 IN) (SEJ - B)	LF	68.000		68.000	
	462-6063	CONC BOX CULV (8 FT X 4 FT)(EXTEND)	LF	32.000		32.000	
	480-6001	CLEAN EXIST CULVERTS	EA	1.000		1.000	
	496-6008	REMOV STR (BOX CULVERT)	LF	32.000		32.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	10.000		10.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	15.000		15.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	15.000		15.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	220.000		220.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	220.000		220.000	
	506-6032	BLADING WORK (EROSION & SEDMT CONT)	HR	80.000		80.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	4,194.000		4,194.000	

△ ADDED 10/28/2022

△ REVISED 10/28/2022



DISTRICT	COUNTY	CCSJ	SHEET
El Paso	Culberson	0233-05-038	8



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0233-05-038

DISTRICT El Paso
HIGHWAY SH 54

COUNTY Culberson

CONTROL SECTION JOB				0233-05-038		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00183066			
COUNTY				Culberson			
HIGHWAY				SH 54			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	4,194.000		4,194.000	
	508-6001	CONSTRUCTING DETOURS	SY	3,953.000		3,953.000	
	510-6003	ONE-WAY TRAF CONT (PORT TRAF SIG)	MO	8.000		8.000	
	512-6009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF	1,120.000		1,120.000	
	512-6010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF	80.000		80.000	
	512-6057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF	1,120.000		1,120.000	
	512-6058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF	80.000		80.000	
	533-6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4,080.000		4,080.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	1,600.000		1,600.000	
	540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	4.000		4.000	
	540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	2.000		2.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	500.000		500.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	2.000		2.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	4.000		4.000	
	552-6001	WIRE FENCE (TY A)	LF	3,600.000		3,600.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	8.000		8.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	7.000		7.000	
	658-6014	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)	EA	6.000		6.000	
	658-6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	4.000		4.000	
	658-6061	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2	EA	17.000		17.000	
	658-6103	INSTL OM ASSM (OM-3L)(WFLX)GND)GND	EA	4.000		4.000	
	662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	96.000		96.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	5,043.000		5,043.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	3,840.000		3,840.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	100.000		100.000	
	662-6110	WK ZN PAV MRK SHT TERM (TAB)TY Y	EA	100.000		100.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	100.000		100.000	
	666-6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	LF	4,080.000		4,080.000	
	666-6344	REF PROF PAV MRK TY I(Y)4"(BRK)(100MIL)	LF	320.000		320.000	
	666-6345	REF PROF PAV MRK TY I(Y)4"(SLD)(100MIL)	LF	3,306.000		3,306.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	39.000		39.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	4,351.000		4,351.000	
	678-6001	PAV SURF PREP FOR MRK (4")	LF	7,386.000		7,386.000	
	700-6001	POTHOLE REPAIR (STANDARD)	SY	100.000		100.000	
	740-6005	ANTI - GRAFFITI COATNG(PERMNENT-TY III)	SF	3,581.000		3,581.000	
	3076-6026	D-GR HMA TY-C SAC-A PG70-22 (EXEMPT)	TON	1,483.000		1,483.000	
	4171-6001	INSTALL BRIDGE IDENTIFICATION NUMBERS	EA	2.000		2.000	

2 REVISED 10/28/2022

DISTRICT	COUNTY	CCSJ	SHEET
El Paso	Culberson	0233-05-038	8A

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SHEET	SUMMARY OF TCP ITEMS										
	*** 462 6063	*** 480 6001	*** 496 6008	500 6001	502 6001	508 6001	510 6003	512 6009	512 6010	512 6057	512 6058
	CONC BOX CULV (8 FT X 4 FT) (EXTEND)	CLEAN EXIST CULVERTS	REMOV STR (BOX CULVERT)	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING	CONSTRUCTING DETOURS	ONE-WAY TRAF CONT (PORT TRAF SIG)	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	PORT CTB (REMOVE) (LOW PROF) (TY 1)	PORT CTB (REMOVE) (LOW PROF) (TY 2)
SH54											
PHASE 1	32	1		1	10	3953	8	1120	80		
PHASE 2											
PHASE 3			32							1120	80
PROJECT TOTALS	32	1	32	1	10	3953	8	1120	80	1120	80

SHEET	SUMMARY OF TCP ITEMS									
	540 6001	542 6001	544 6001	544 6003	662 6050	662 6063	662 6095	* 662 6109	* 662 6110	* 662 6111
	MTL W-BEAM GD FEN (TIM POST)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (INSTALL)	GUARDRAIL END TREATMENT (REMOVE)	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK REMOV (W) 4" (SLD)	WK ZN PAV MRK REMOV (Y) 4" (SLD)	WK ZN PAV MRK SHT TERM (TAB) TY W	WK ZN PAV MRK SHT TERM (TAB) TY Y	WK ZN PAV MRK SHT TERM (TAB) TY Y-2
SH54										
PHASE 1	500		4		96	5043	3840			
PHASE 2										
PHASE 3		500		4				100	100	100
PROJECT TOTALS	500	500	4	4	96	5043	3840	100	100	100

SHEET	SUMMARY OF TCP ITEMS					
	677 6001	* 6001 6002	* 6056 6001	* 6185 6002	* 6185 6005	* 7148 6019
	ELIM EXT PAV MRK & MRKS (4")	PORTABLE CHANGEABLE MESSAGE SIGN	PREFORMED IN-LANE (TRANS) RUMBLE STRIP	TMA (STATIONARY)	TMA (MOBILE OPERATION)	FURNISH ADDITIONAL FLAGGER
SH54						
PHASE 1		3	216	600	20	80
PHASE 2	4353					
PHASE 3						
PROJECT TOTALS	4353	3	216	600	20	80

REFER TO THE TCP LINE DIAGRAM FOR QUANTITIES TO REMAIN FOR THE DURATION OF THE PROJECT.

* TO BE USED AS DIRECTED BY THE ENGINEER

*** REFER TO TEMPORARY CULVERT EXTENSION DETAIL FOR QUANTITIES.

DATE	BY	REV	REVISION

OMEGA ENGINEERS, INC. 8200 N MOPAC EXPRESSWAY, STE #280
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SH 54 @ DIABLO CREEK

TCP
SUMMARY SHEET

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	9
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

REVISD, 10/25/2022

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SUMMARY OF EARTHWORK
 DETOURS

STATION (SH54)	110	132
	6003	6002
	EXCAVATION (SPECIAL)	EMBANKMENT (FINAL)
	CY	CY
766+50	8	1
767+00	12	1
767+50	5	4
768+00	0	49
768+50	0	166
769+00	0	386
769+50	0	591
770+00	0	679
770+50	0	698
771+00	0	556
771+50	0	311
772+00	0	199
772+50	0	202
773+00	3	179
773+50	12	95
774+00	29	24
774+50	86	5
775+00	211	0
775+50	371	0
776+00	488	0
776+50	515	0
777+00	401	0
777+50	306	0
778+00	364	0
778+50	436	0
779+00	437	0
779+50	402	0
780+00	240	16
780+50	59	36
781+00	15	37
781+50	301	17
782+00	515	0
782+50	394	0
783+00	306	0
783+50	175	0
784+00	61	1
784+50	12	136
785+00	1	146
785+50	13	15
786+00	42	5
786+50	70	1
787+00	80	0
787+50	84	0
788+00	79	0
788+50	67	0
789+00	32	0
DETOUR TOTAL	6627	4553

SUMMARY OF EARTHWORK
 SH 54

STATION (SH54)	110	132	110
	6001	6002	6003
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL)	EXCAVATION (SPECIAL)
	CY	CY	CY
770+00.00 R1			
770+50.00 R1	174	0	0
771+00.00 R1	427	0	0
771+50.00 R1	519	3	0
772+00.00 R1	509	7	0
772+50.00 R1	429	4	0
773+00.00 R1	312	0	
773+50.00 R1	220	3	
774+00.00 R1	148	13	
774+50.00 R1	101	33	
775+00.00 R1	83	57	
775+50.00 R1	58	98	
776+00.00 R1	21	161	
776+50.00 R1	1	260	
777+00.00 R1	3	371	
777+50.00 R1	4	482	
778+00.00 R1	3	579	
778+50.00 R1	3	658	
779+00.00 R1	2	811	
779+50.00 R1	3	653	
780+00.00 R1	2	195	
780+50.00 R1	0	0	
781+00.00 R1	0	0	
781+50.00 R1	0	0	
782+00.00 R1	27	223	
782+50.00 R1	33	363	
783+00.00 R1	10	275	
783+50.00 R1	7	223	
784+00.00 R1	9	140	
784+50.00 R1	26	58	
785+00.00 R1	54	30	
785+50.00 R1	68	38	
786+00.00 R1	78	18	
786+50.00 R1	87	3	
787+00.00 R1	14	0	
TOTAL	3438	5760	0

REVISION, 10/26/2022

DATE	BY	REV	REVISION

OMEGA ENGINEERS, INC.
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SH 54 @ DIABLO CREEK

EARTHWORK QUANTITIES
 SUMMARY SHEET

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	10
DRN	OEI	TEXAS	ELP	CULBERSON
CHK	OEI	0233	05	038 SH 54

SUMMARY OF ROADWAY ITEMS											
SHEET	110 6001	110 6003	132 6002	* 216 6001	247 6121	275 6001	275 6019	310 6001	354 6002	432 6010	432 6046
	EXCAVATION (ROADWAY)	EXCAVATION (SPECIAL)	EMBANKMENT (FINAL) (DENS CONT) (TY A)	PROOF ROLLING	FL BS (RDWY DEL) (TY A GR 1-2)	CEMENT	CEMENT TREAT (SUBGRADE) (6")	PRIME COAT (MULTI OPTION)	PLAN & TEXT ASPH CONC PAV (0" TO 2")	RIPRAP (CONC) (CL B) (5 IN)	RIPRAP (MOW STRIP) (5 IN)
	CY	CY	CY	HR	TON	TON	SY	GAL	SY	CY	CY
SH54											
ON-SITE DETOUR P&P		6627	4553		1201						
ROADWAY PLAN & PROFILE	3438		5760	40	1787	30	5201	780	1728		91
PROJECT TOTALS	3438	6627	10313	40	2988	30	5201	780	1728	0	91

432 6046	SHEET	506 6032	540 6001	540 6006	* 540 6016	* 544 6001	700 6001	3076 6026
RIPRAP (MOW STRIP) (5 IN)		BLADING WORK (EROSION & SEDMT CONT)	MTL W-BEAM GD FEN (TIM POST)	MTL BEAM GD FEN TRANS (THRIE-BEAM)	DOWNSTREAM ANCHOR TERMINAL SECTION	GUARDRAIL END TREATMENT (INSTALL)	POTHOLE REPAIR (STANDARD)	D-GR HMA TY-C SAC-A PG70-22 (EXCEMPT)
CY		HR	LF	EA	EA	EA	SY	TON
	SH54							
	ON-SITE DETOUR P&P							652
91	ROADWAY PLAN & PROFILE	80	1100	4	2	2	100	831
91	PROJECT TOTALS	80	1100	4	2	2	100	1483

* TO BE USED AT THE DISCRETION OF THE ENGINEER.

SUMMARY OF REMOVAL ITEMS						
SHEET	100 6001	105 6043	552 6001	644 6076	658 6060	677 6001
	## PREPARING ROW	REMOVING STAB BASE & ASPH PAV (0-6")	WIRE FENCE (TY A)	REMOVE SM RD SN SUP&AM	REMOVE DELIN & OBJECT MARKER ASSMS	ELIM EXT PAV MRK & MRKS (4")
	AC	SY		EA	EA	LF
REMOVAL LAYOUT						
SHEET 1 OF 2	5	4500	3600	6	4	978
SHEET 2 OF 2				1		1090
TOTALS	5	4500	3600	7	4	2068

EXISTING FENCE REMOVAL WILL BE PAID UNDER PREP ROW BID ITEM. THIS INCLUDES ALL MATERIALS, LABOR, DISPOSAL AND INCIDENTALS. ESTIMATED LENGTH TO BE REMOVED IS 3600 LF. ALL EXISTING POSTS MUST BE INCLUDED IN THE REMOVAL.

REVISED, 10/26/2022

DATE	BY	REV	REVISION

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ROADWAY & REMOVALS
SUMMARY SHEET

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	11
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

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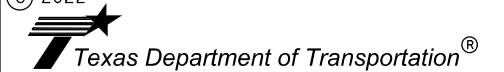
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SUMMARY OF SHEET PILING ITEMS			
SHEET	132 6056	407 6006	432 6010
	EMBANKMENT (FINAL) (ORD COMP) (TY C2) (DS)	SHEET PILING (PZ-40)	RIPRAP (CONC) (CLB) (5IN)
	CY	SF	CY
SHEET 1 OF 5	16	5410	24
SHEET 2 OF 5	22	3800	17
SHEET 3 OF 5		2201	10
SHEET 4 OF 5		1642	10
SHEET 5 OF 5	40	1477	16
SHEET TOTALS	78	14530	77

DATE	BY	REV	REVISION

OMEGA ENGINEERS, INC. 8200 N MOPAC EXPRESSWAY, STE #280
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SH 54 @ DIABLO CREEK

SHEET PILING
 SUMMARY SHEET

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	12
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

△ REVISED, 10/26/2022

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SUMMARY OF SWP3 ITEMS						
SHEET	506	506	506	506	506	506
	6002	6011	6020	6024	6038	6039
	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)
	LF	LF	LF	LF	CY	CY
SWP3 Phase 1	15		110	110	4194	
SWP3 Phase 2		15	110	110		4194
PROJECT TOTALS	15	15	220	220	4194	4194

▲ REVISED, 10/26/2022			
DATE	BY	REV	REVISION

OMEGA ENGINEERS, INC.
 8200 N MOPAC EXPRESSWAY, STE #280
 AUSTIN, TEXAS 78759
 OMEGAENGINEERS.COM
 TX PE Firm Reg. No. F-2147
 Ph 512 575 2288 Fx 281 647 9184



SH 54 @ DIABLO CREEK

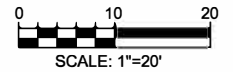
SWP3 QUANTITIES
 SUMMARY SHEET

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	14
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

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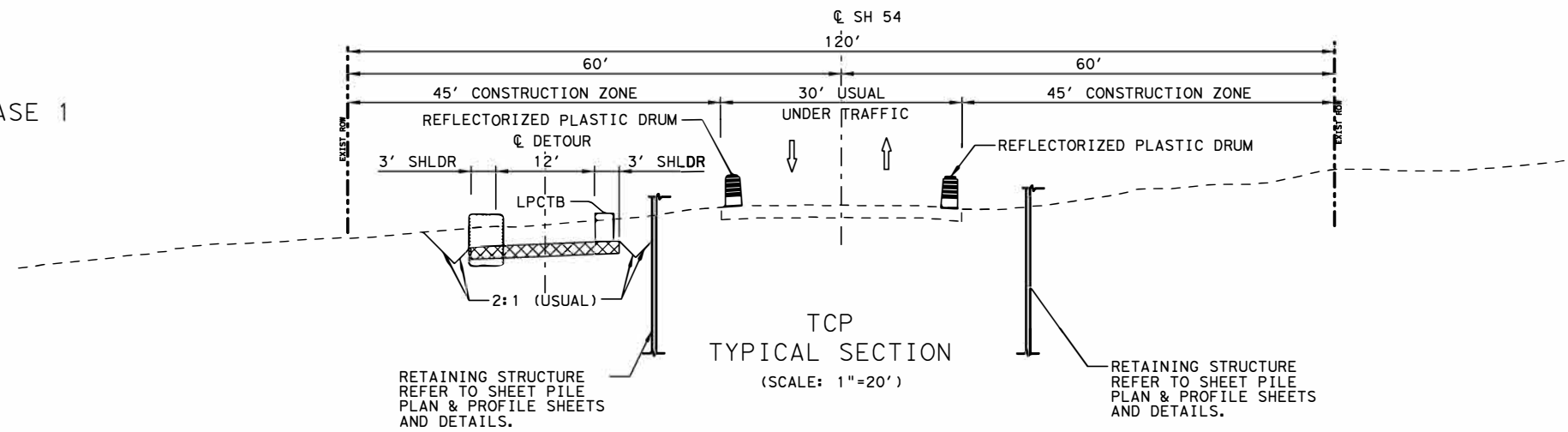
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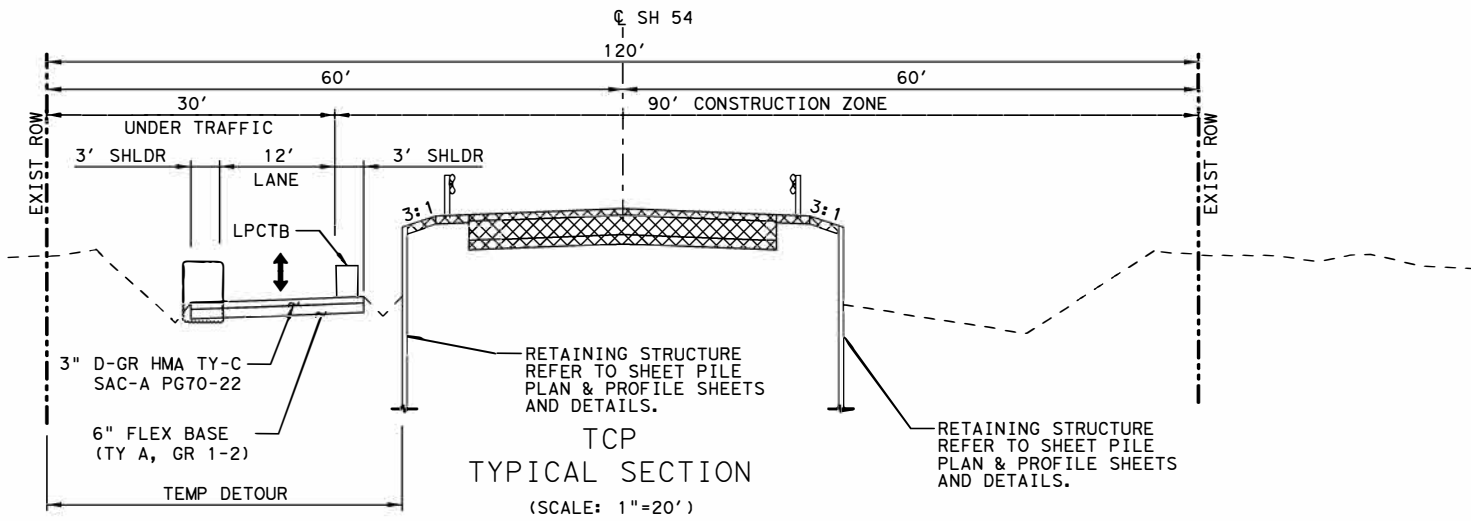
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➔ PROPOSED TRAFFIC FLOW

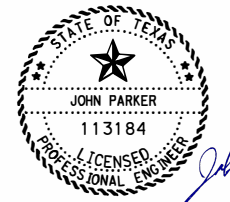
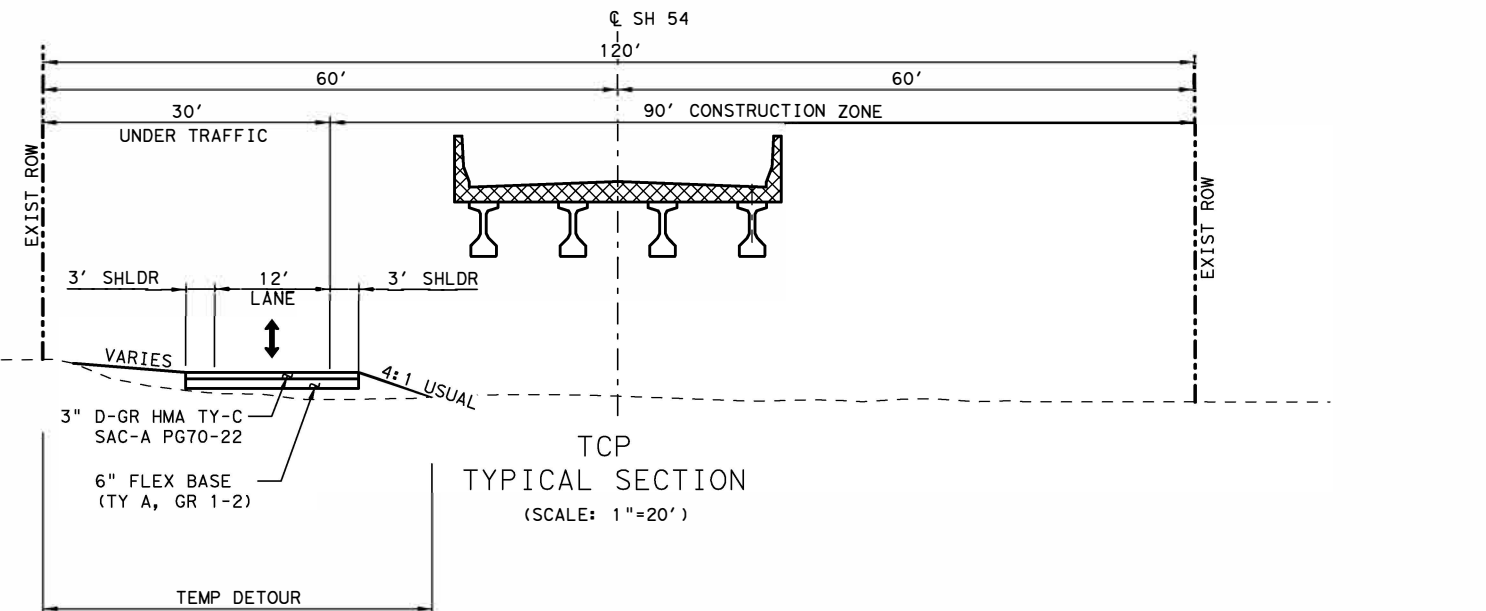
PHASE 1



PHASE 2



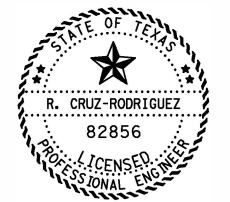
PHASE 2



John Parker

REVISD, 10/26/2022

DATE	BY	REV	REVISION



09-27-2022

OMEGA ENGINEERS, INC.
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 AUSTIN, TEXAS 78759
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 TX PE Firm Reg. No. F-2147
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SH 54 @ DIABLO CREEK

TCP
 ON-SITE TEMPORARY DETOUR
 TYPICAL SECTIONS

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	16
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

TWO WAY DETOUR

Chain DET_W contains:
 DETW012 CUR DET_W1 CUR DET_W2 CUR DET_W3 CUR DET_W4

Beginning chain DET_W description

Point DETW012 N 10,441,989.6931 E 884,787.0628 Sta 766+00.00

Course from DETW012 to PC DET_W1 N 19° 41' 37.89" W Dist 19.9376

Curve Data

Curve DET_W1
 P.I. Station = 766+81.21 N 10,442,066.1491 E 884,759.6969
 Delta = 5° 36' 43.84" (LT)
 Degree = 4° 35' 01.18"
 Tangent = 61.2684
 Length = 122.4388
 Radius = 1,250.0000
 External = 1.5006
 Long Chord = 122.3898
 Mid. Ord. = 1.4988
 P.C. Station = 766+19.94 N 10,442,008.4645 E 884,780.3440
 P.T. Station = 767+42.38 N 10,442,121.5380 E 884,733.5075
 C.C. = N 10,441,587.2216 E 883,603.4606
 Back = N 19° 41' 37.89" W
 Ahead = N 25° 18' 21.73" W
 Chord Bear = N 22° 29' 59.81" W

Course from PT DET_W1 to PC DET_W2 N 25° 18' 21.73" W Dist 245.5823

Curve Data

Curve DET_W2
 P.I. Station = 770+49.23 N 10,442,398.9425 E 884,602.3432
 Delta = 5° 36' 43.85" (RT)
 Degree = 4° 35' 01.18"
 Tangent = 61.2684
 Length = 122.4388
 Radius = 1,250.0000
 External = 1.5006
 Long Chord = 122.3898
 Mid. Ord. = 1.4988
 P.C. Station = 769+87.96 N 10,442,343.5536 E 884,628.5326
 P.T. Station = 771+10.40 N 10,442,456.6271 E 884,581.6961
 C.C. = N 10,442,877.8700 E 885,758.5795
 Back = N 25° 18' 21.73" W
 Ahead = N 19° 41' 37.89" W
 Chord Bear = N 22° 29' 59.81" W

Course from PT DET_W2 to PC DET_W3 N 19° 41' 37.89" W Dist 1,396.1701

Curve Data

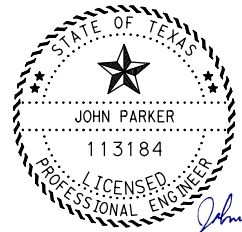
Curve DET_W3
 P.I. Station = 785+67.86 N 10,443,828.8352 E 884,090.5405
 Delta = 5° 36' 50.85" (RT)
 Degree = 4° 35' 01.18"
 Tangent = 61.2896
 Length = 122.4812
 Radius = 1,250.0000
 External = 1.5017
 Long Chord = 122.4322
 Mid. Ord. = 1.4999
 P.C. Station = 785+06.57 N 10,443,771.1306 E 884,111.1947
 P.T. Station = 786+29.05 N 10,443,888.2836 E 884,075.6304
 C.C. = N 10,444,192.3735 E 885,288.0781
 Back = N 19° 41' 37.89" W
 Ahead = N 14° 04' 47.04" W
 Chord Bear = N 16° 53' 12.47" W

Course from PT DET_W3 to PC DET_W4 N 14° 04' 47.04" W Dist 245.4171

Curve Data

Curve DET_W4
 P.I. Station = 789+35.73 N 10,444,185.7533 E 884,001.0230
 Delta = 5° 36' 43.06" (LT)
 Degree = 4° 35' 01.18"
 Tangent = 61.2660
 Length = 122.4340
 Radius = 1,250.0000
 External = 1.5005
 Long Chord = 122.3851
 Mid. Ord. = 1.4987
 P.C. Station = 788+74.47 N 10,444,126.3279 E 884,015.9273
 P.T. Station = 789+96.90 N 10,444,243.4364 E 883,980.3789
 C.C. = N 10,443,822.2379 E 882,803.4797
 Back = N 14° 04' 47.04" W
 Ahead = N 19° 41' 30.11" W
 Chord Bear = N 16° 53' 08.57" W

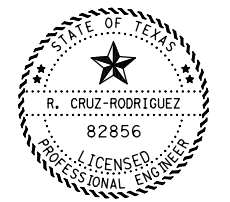
Ending chain DET_W description



John Parker

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DATE	BY	REV	REVISION



09-27-2022

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 AUSTIN, TEXAS 78759
 OMEGAENGINEERS.COM
 TX PE Firm Reg. No. F-2147
 Ph 512 575 2288 Fx 281 647 9184



SH 54 @ DIABLO CREEK
 ON-SITE TEMPORARY DETOUR
 HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 1

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
		6	SEE TITLE SHEET		17
CHK	OEI	STATE	DIST.	COUNTY	
		TEXAS	ELP	CULBERSON	
DRN	OEI	CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

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10/26/2022
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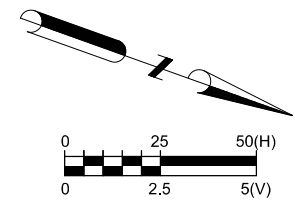
Curve DET_W1	*-----*				
P.I. Station	766+81.21	N	10,442,066.1491	E	884,759.6969
Delta	5° 36' 43.84" (LT)				
Degree	4° 35' 01.18"				
Tangent	61.2684				
Length	122.4388				
Radius	1,250.0000				
External	1.5006				
Long Chord	122.3898				
Mid. Ord.	1.4988				
P.C. Station	766+19.94	N	10,442,008.4645	E	884,780.3440
P.T. Station	767+42.38	N	10,442,121.5380	E	884,733.5075
C.C. Station	767+31.16	N	10,441,587.2216	E	883,603.4606
Back	= N 19° 41' 37.89" W				
Ahead	= N 25° 18' 21.73" W				
Chord Bear	= N 22° 29' 59.81" W				

Course from PT DET_W1 to PC DET_W2 N 25° 18' 21.73" W Dist 245.5823

Curve Data

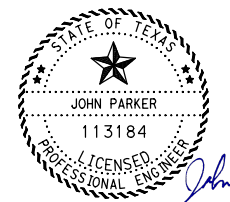
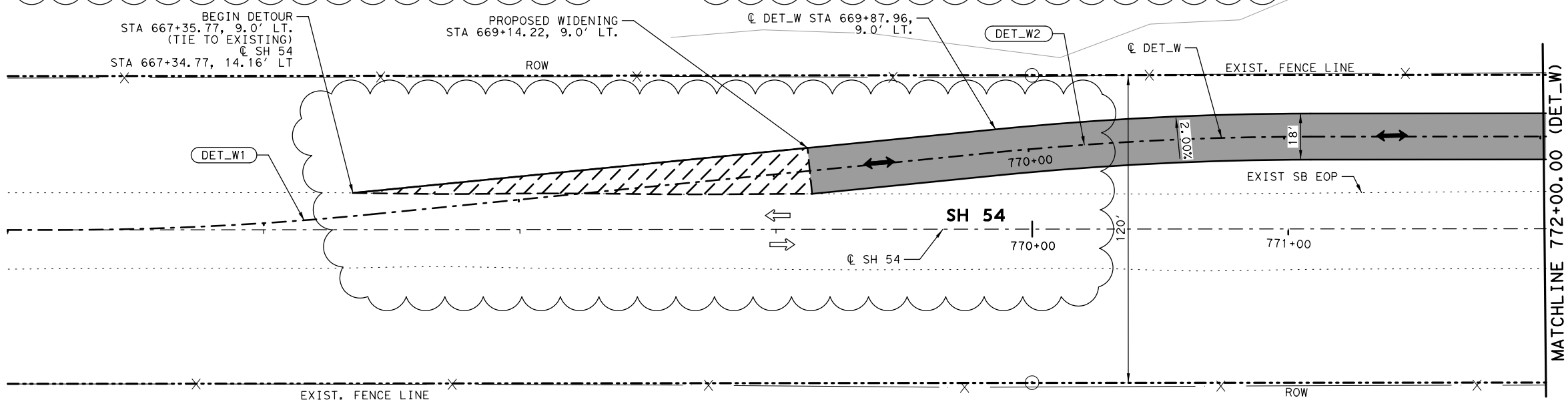
Curve DET_W2	*-----*				
P.I. Station	770+49.23	N	10,442,398.9425	E	884,602.3432
Delta	5° 36' 43.85" (RT)				
Degree	4° 35' 01.18"				
Tangent	61.2684				
Length	122.4388				
Radius	1,250.0000				
External	1.5006				
Long Chord	122.3898				
Mid. Ord.	1.4988				
P.C. Station	769+87.96	N	10,442,343.5536	E	884,628.5326
P.T. Station	771+10.40	N	10,442,456.6271	E	884,581.6961
C.C. Station	770+49.23	N	10,442,877.8700	E	885,758.5795
Back	= N 25° 18' 21.73" W				
Ahead	= N 19° 41' 37.89" W				
Chord Bear	= N 22° 29' 59.81" W				

Course from PT DET_W2 to PC DET_W3 N 19° 41' 37.89" W Dist 1,396.1701



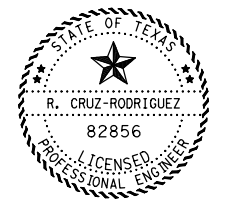
- LEGEND**
- EXISTING TRAFFIC
 - PROPOSED TRAFFIC
 - DIRECTION OF FLOW
 - PROPOSED TEMPORARY PAVEMENT
 - PROPOSED PAVEMENT WIDENING

- NOTES:**
- REFER TO REMOVAL LAYOUTS FOR INFORMATION ON ITEMS TO BE REMOVED.
 - REFER TO CROSS SECTIONS FOR SIDE SLOPES AND CROSS-SLOPES.



REVISD, 10/26/2022

DATE	BY	REV	REVISION
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09-27-2022

OMEGA ENGINEERS, INC.
 8200 N MOPAC EXPRESSWAY, STE #280
 AUSTIN, TEXAS 78759
 OMEGAENGINEERS.COM
 TX PE Firm Reg. No. F-2147
 Ph 512 575 2288 Fax 512 647 9184

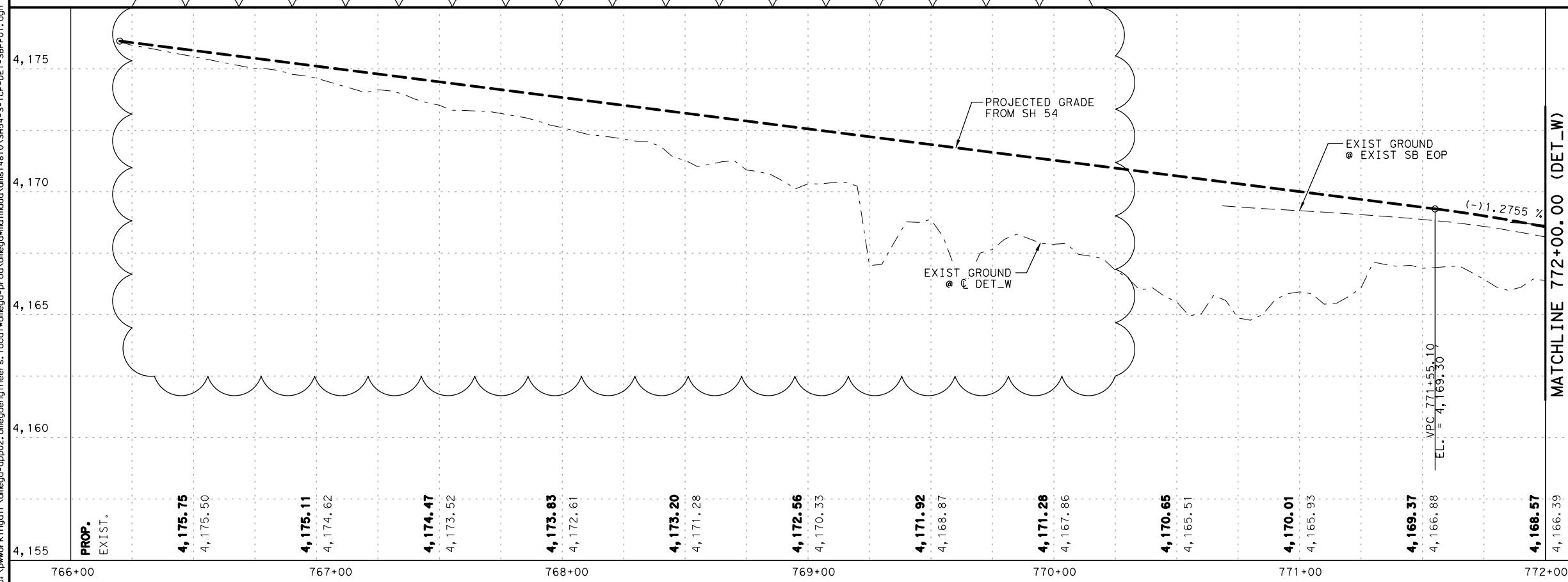


SH 54 @ DIABLO CREEK

ON-SITE TEMPORARY DETOUR PLAN & PROFILE

STA 666+00 TO STA 772+00

SHEET 1 OF 5



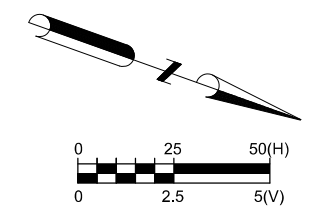
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CHK	OEI	6	SEE TITLE SHEET	18	
DRN	OEI	STATE	DIST.	COUNTY	
CHK	OEI	TEXAS	ELP	CULBERSON	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

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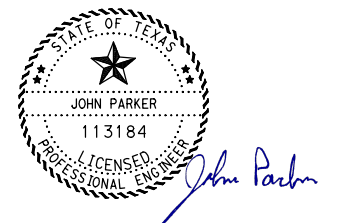
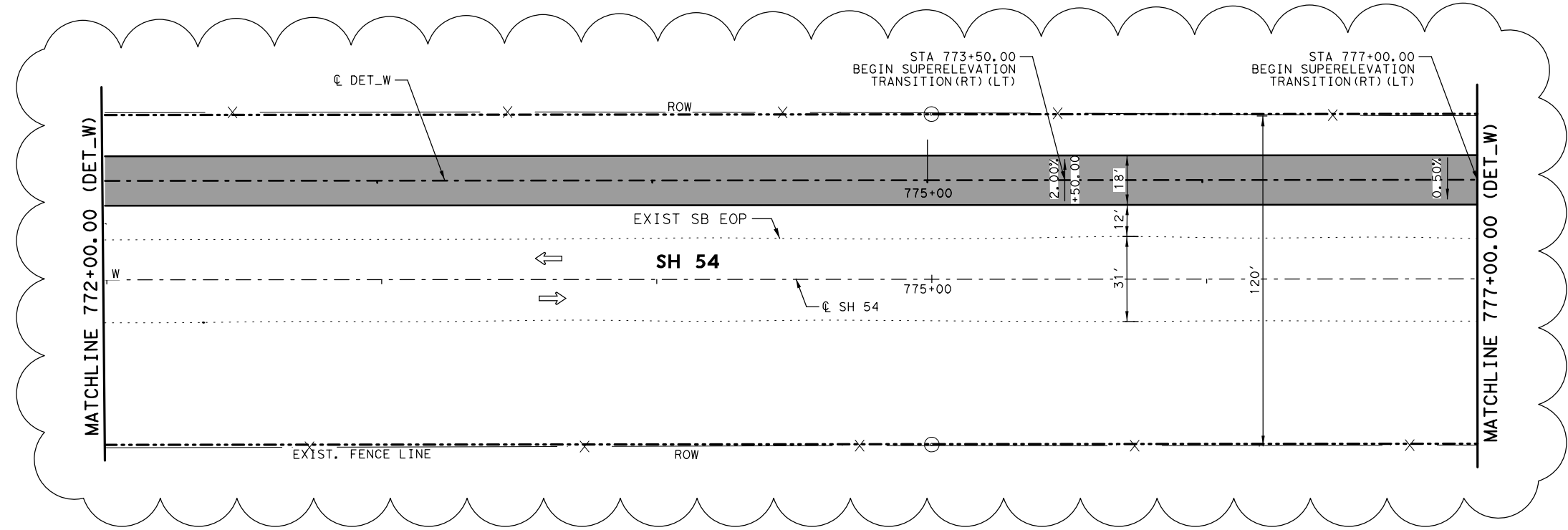
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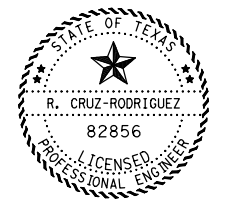
- LEGEND**
- EXISTING TRAFFIC
 - PROPOSED TRAFFIC
 - DIRECTION OF FLOW
 - PROPOSED TEMPORARY PAVEMENT
 - PROPOSED PAVEMENT WIDENING

- NOTES:**
1. REFER TO REMOVAL LAYOUTS FOR INFORMATION ON ITEMS TO BE REMOVED.
 2. REFER TO CROSS SECTIONS FOR SIDE SLOPES AND CROSS-SLOPES.



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09-27-2022

OMEGA ENGINEERS, INC.
 8200 N MOPAC EXPRESSWAY, STE #280
 AUSTIN, TEXAS 78759
 OMEGAENGINEERS.COM
 TX PE Firm Reg. No. F-2147
 Ph 512 575 2288 Fx 281 647 9184

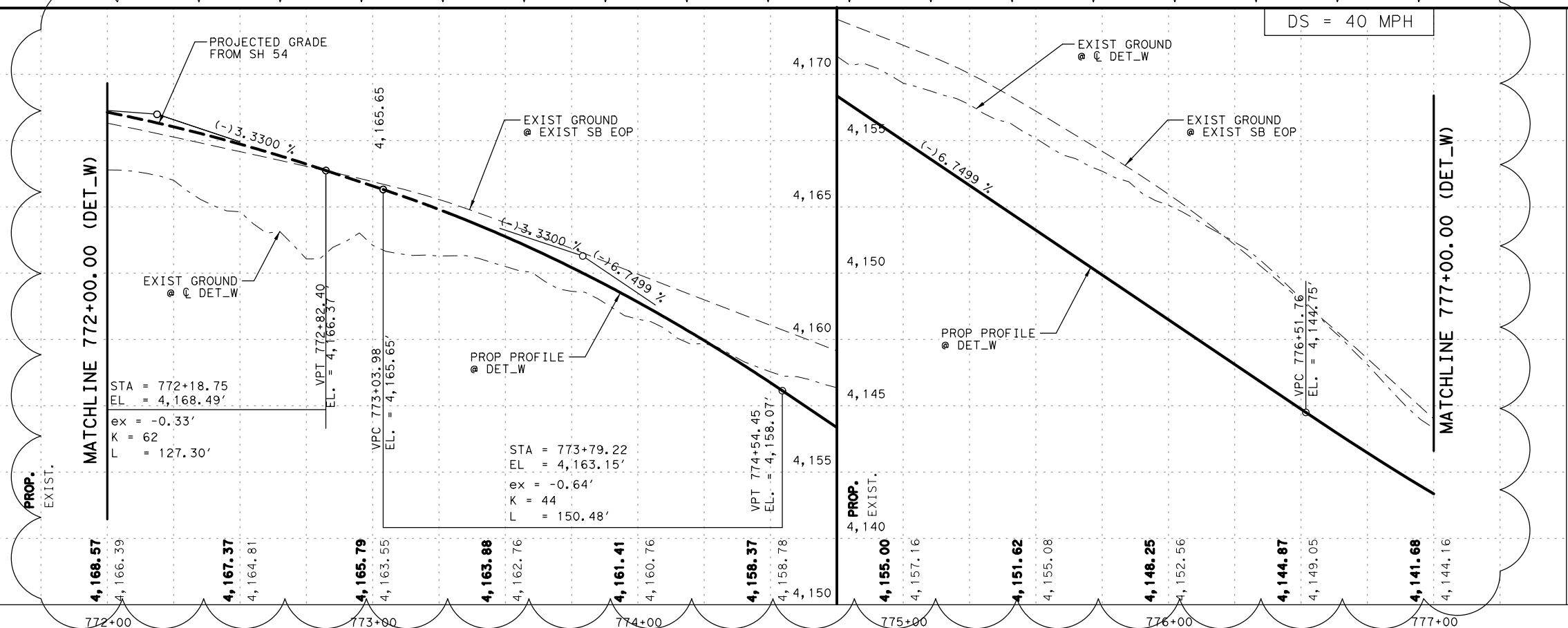


SH 54 @ DIABLO CREEK

ON-SITE TEMPORARY DETOUR PLAN & PROFILE

STA 772+00 TO STA 777+00

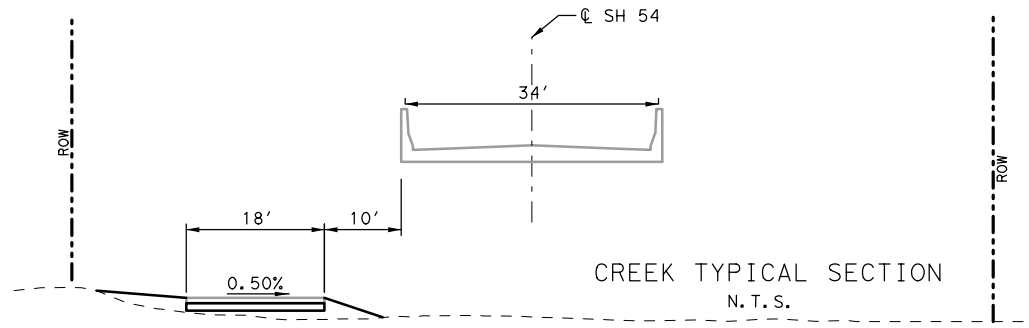
SHEET 3 OF 5



DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
CHK	OEI	6	SEE TITLE SHEET	19	
DRN	OEI	STATE	DIST.	COUNTY	
CHK	OEI	TEXAS	ELP	CULBERSON	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

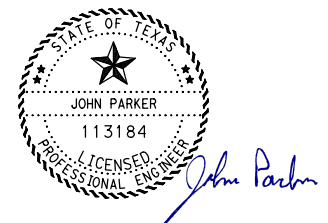
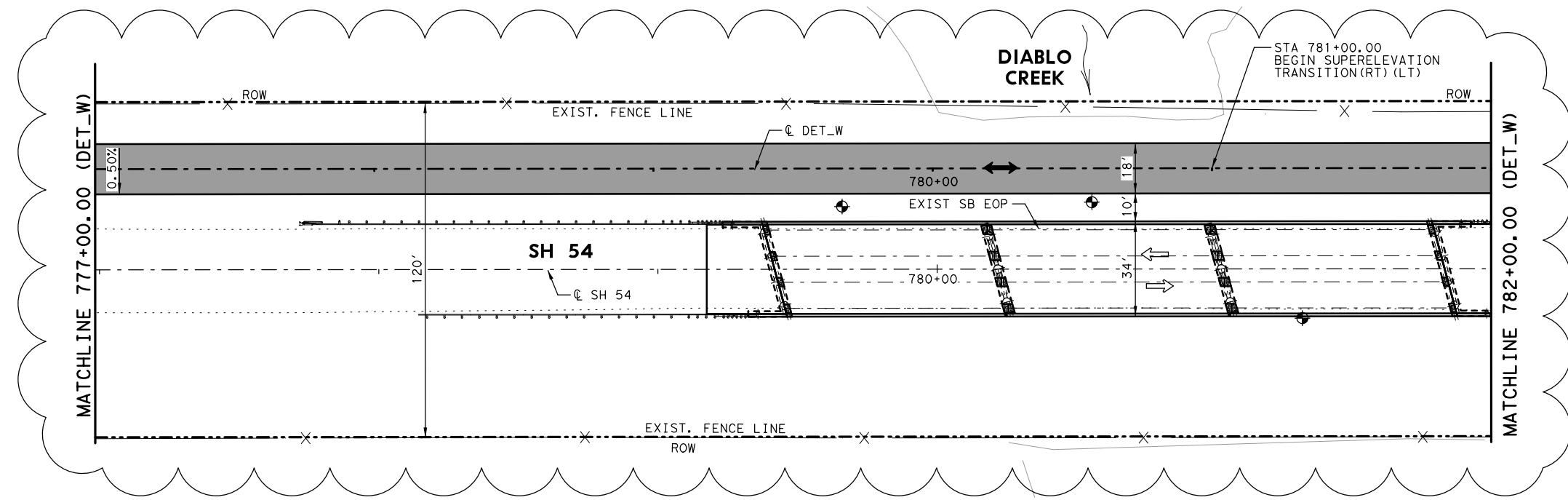
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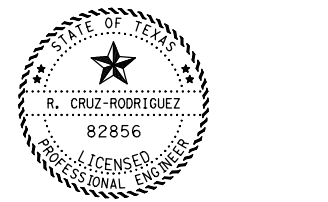
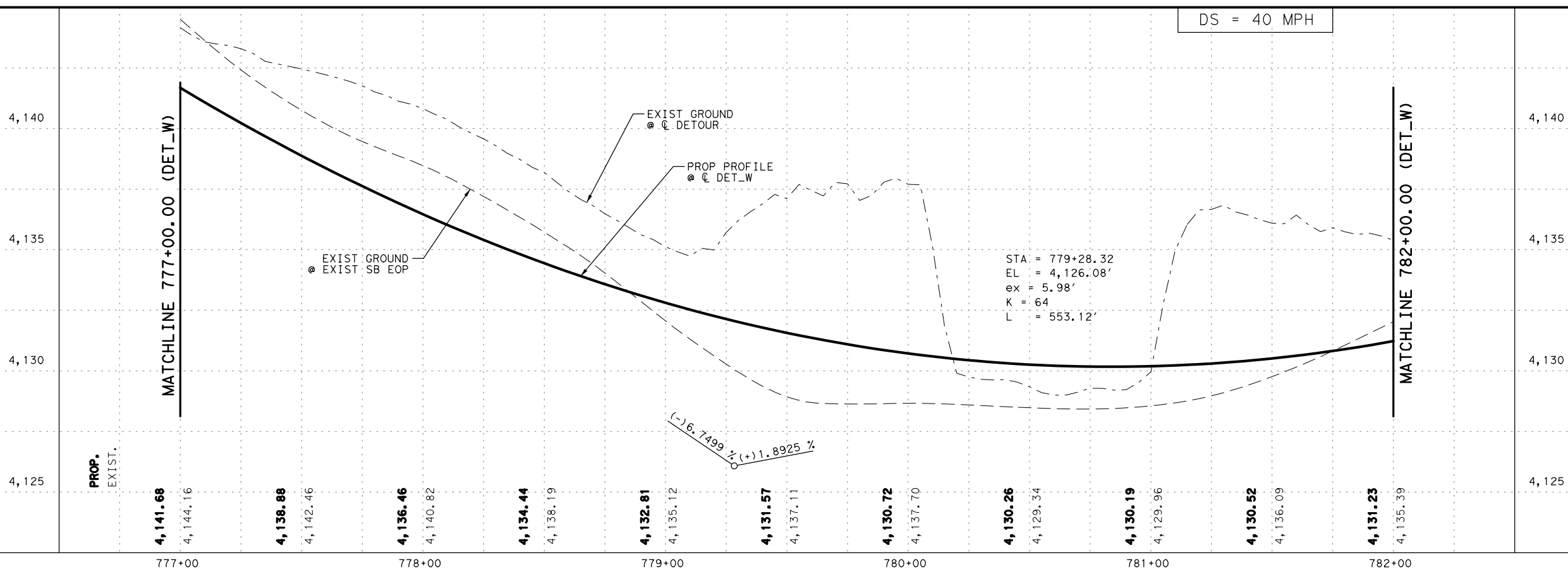
- LEGEND**
- ➡ EXISTING TRAFFIC
 - ➡ PROPOSED TRAFFIC
 - ➡ DIRECTION OF FLOW
 - ▨ PROPOSED TEMPORARY PAVEMENT
 - ▨ PROPOSED PAVEMENT WIDENING

- NOTES:**
1. REFER TO REMOVAL LAYOUTS FOR INFORMATION ON ITEMS TO BE REMOVED.
 2. REFER TO CROSS SECTIONS FOR SIDE SLOPES AND CROSS-SLOPES.



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09-27-2022

OMEGA ENGINEERS, INC.
 8200 N MOPAC EXPRESSWAY, STE #280
 AUSTIN, TEXAS 78759
 OMEGAENGINEERS.COM
 TX PE Firm Reg. No. F-2147
 P#512 575 2288 F#281 647 9184



SH 54 @ DIABLO CREEK

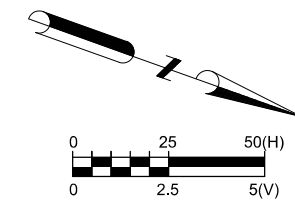
ON-SITE TEMPORARY DETOUR
 PLAN & PROFILE

STA 777+00 TO STA 782+00
 SHEET 3 OF 5

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
CHK	OEI	6	SEE TITLE SHEET	20	
DRN	OEI	STATE	DIST.	COUNTY	
CHK	OEI	TEXAS	ELP	CULBERSON	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

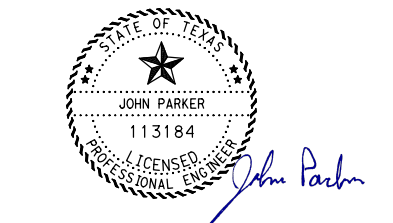
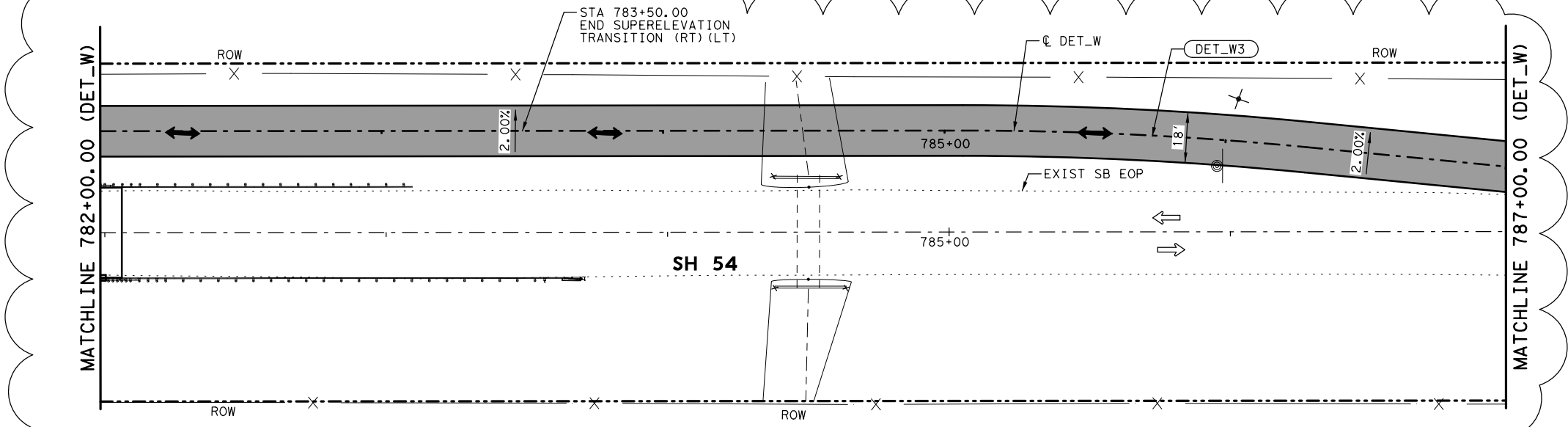
Curve Data

Curve	DET_W3			
P. I. Station	785+67.86	N	10,443,828.8352	E 884,090.5405
Delta	5° 36' 50.85"	(RT)		
Degree	4° 35' 01.18"			
Tangent	61.2896			
Length	122.4812			
Radius	1,250.0000			
External	1.5017			
Long Chord	122.4322			
Mid. Ord.	1.4999			
P. C. Station	785+06.57	N	10,443,771.1306	E 884,111.1947
P. T. Station	786+29.05	N	10,443,888.2836	E 884,075.6304
C. C. Station		N	10,444,192.3735	E 885,288.0781
Back	= N 19° 41' 37.89" W			
Ahead	= N 14° 04' 47.04" W			
Chord Bear	= N 16° 53' 12.47" W			



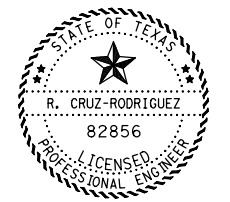
- LEGEND**
- EXISTING TRAFFIC
 - PROPOSED TRAFFIC
 - DIRECTION OF FLOW
 - PROPOSED TEMPORARY PAVEMENT
 - PROPOSED PAVEMENT WIDENING

- NOTES:**
- REFER TO REMOVAL LAYOUTS FOR INFORMATION ON ITEMS TO BE REMOVED.
 - REFER TO CROSS SECTIONS FOR SIDE SLOPES AND CROSS-SLOPES.



REVISED, 10/26/2022

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09-27-2022

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8200 N MOPAC EXPRESSWAY, STE #280
AUSTIN, TEXAS 78759
OMEGAENGINEERS.COM
TX PE Firm Reg. No. F-2147
Ph 512 575 2288 Fx 281 647 9184



SH 54 @ DIABLO CREEK

ON-SITE TEMPORARY DETOUR PLAN & PROFILE

STA 782+00 TO STA 787+00

SHEET 4 OF 5

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
CHK	OEI	6	SEE TITLE SHEET	21	
DRN	OEI	STATE	DIST.	COUNTY	
CHK	OEI	TEXAS	ELP	CULBERSON	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

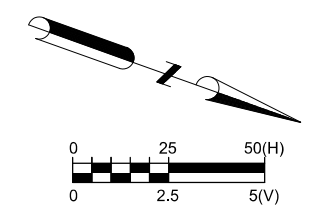
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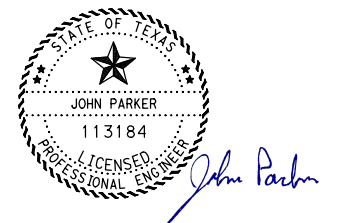
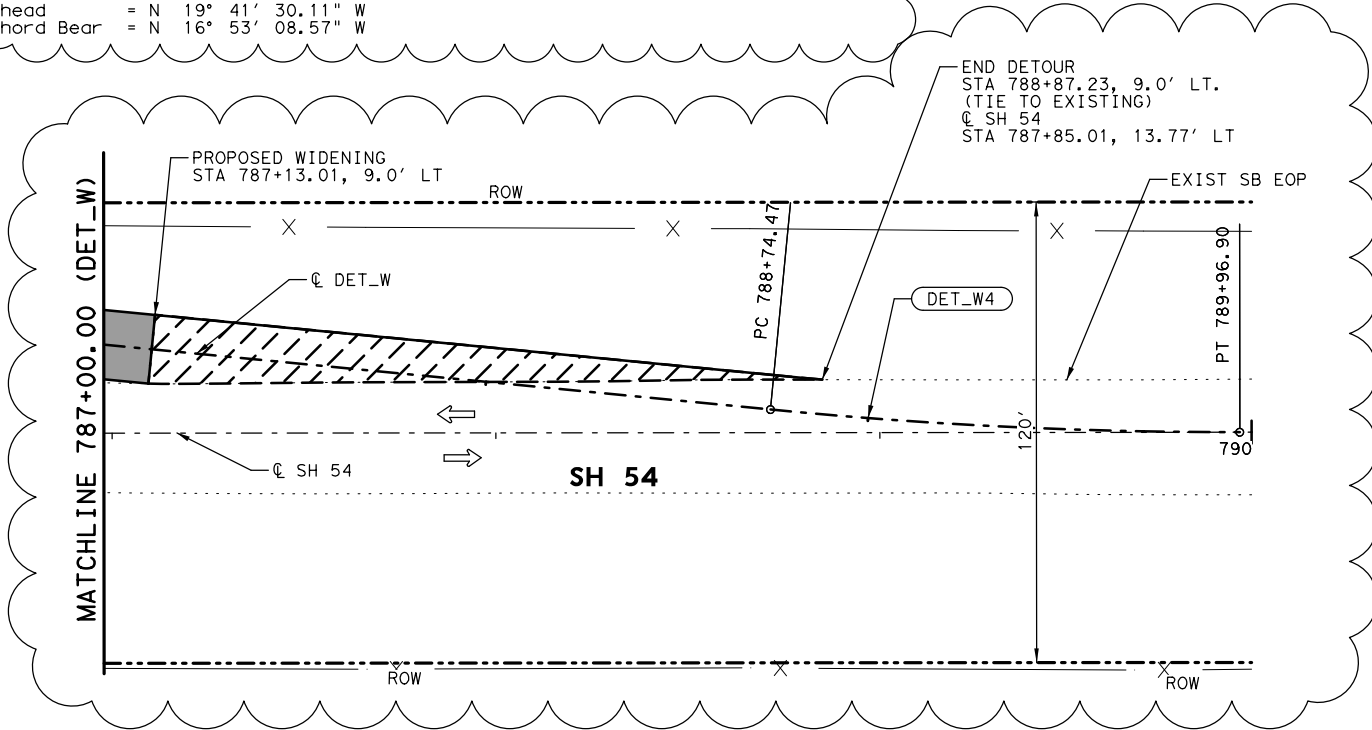
Curve Data

Curve DET_W4	P.I. Station	789+35.73	N	10,444,185.7533	E	884,001.0230
	Delta	5° 36' 43.06"	(LT)			
	Degree	4° 35' 01.18"				
	Tangent	61.2660				
	Length	122.4340				
	Radius	1,250.0000				
	External	1.5005				
	Long Chord	122.3851				
	Mid. Ord.	1.4987				
	P.C. Station	788+74.47	N	10,444,126.3279	E	884,015.9273
	P.T. Station	789+96.90	N	10,444,243.4364	E	883,980.3789
	C.C. Station		N	10,443,822.2379	E	882,803.4797
	Back Sight	N 14° 04' 47.04" W				
	Fore Sight	N 19° 41' 30.11" W				
	Chord Bearing	N 16° 53' 08.57" W				



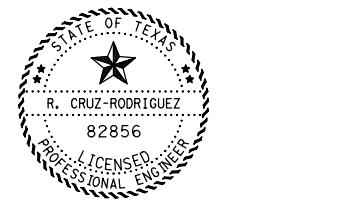
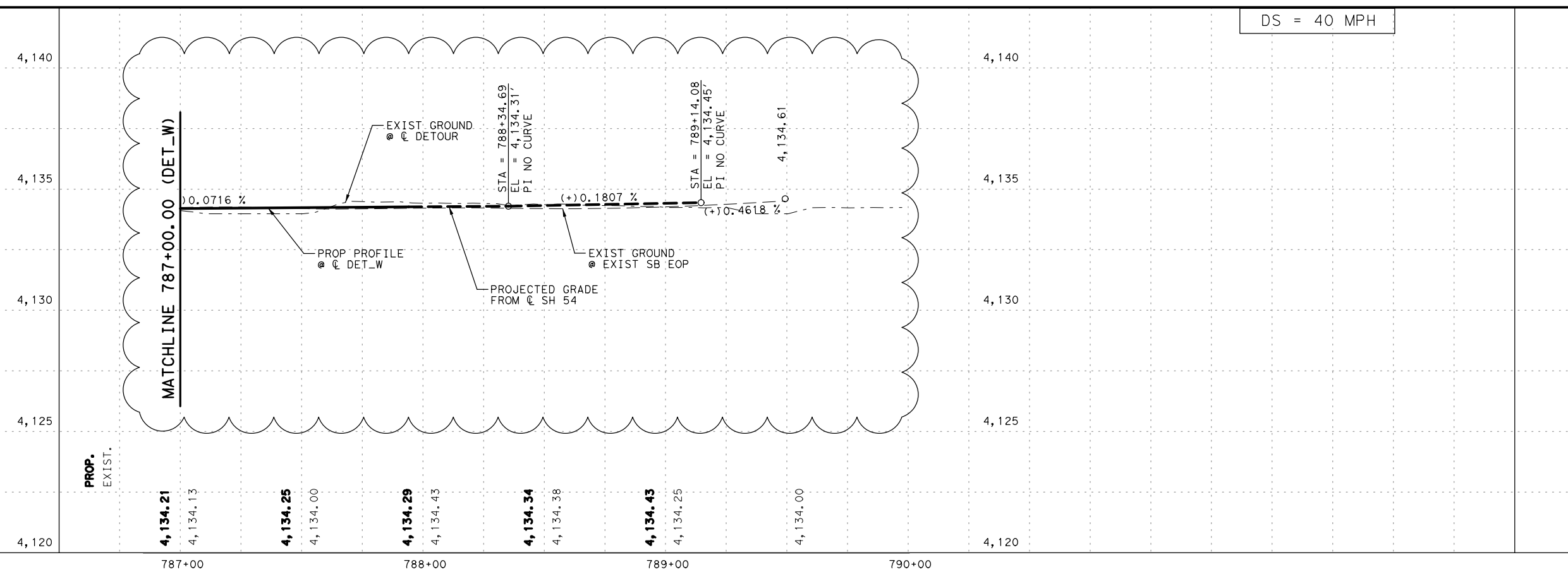
- LEGEND**
- EXISTING TRAFFIC
 - PROPOSED TRAFFIC
 - DIRECTION OF FLOW
 - PROPOSED TEMPORARY PAVEMENT
 - PROPOSED PAVEMENT WIDENING

- NOTES:**
- REFER TO REMOVAL LAYOUTS FOR INFORMATION ON ITEMS TO BE REMOVED.
 - REFER TO CROSS SECTIONS FOR SIDE SLOPES AND CROSS-SLOPES.



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DATE	BY	REV	REVISION
10/26	JP	2	TCP



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SH 54 @ DIABLO CREEK

**ON-SITE TEMPORARY DETOUR
 PLAN & PROFILE**

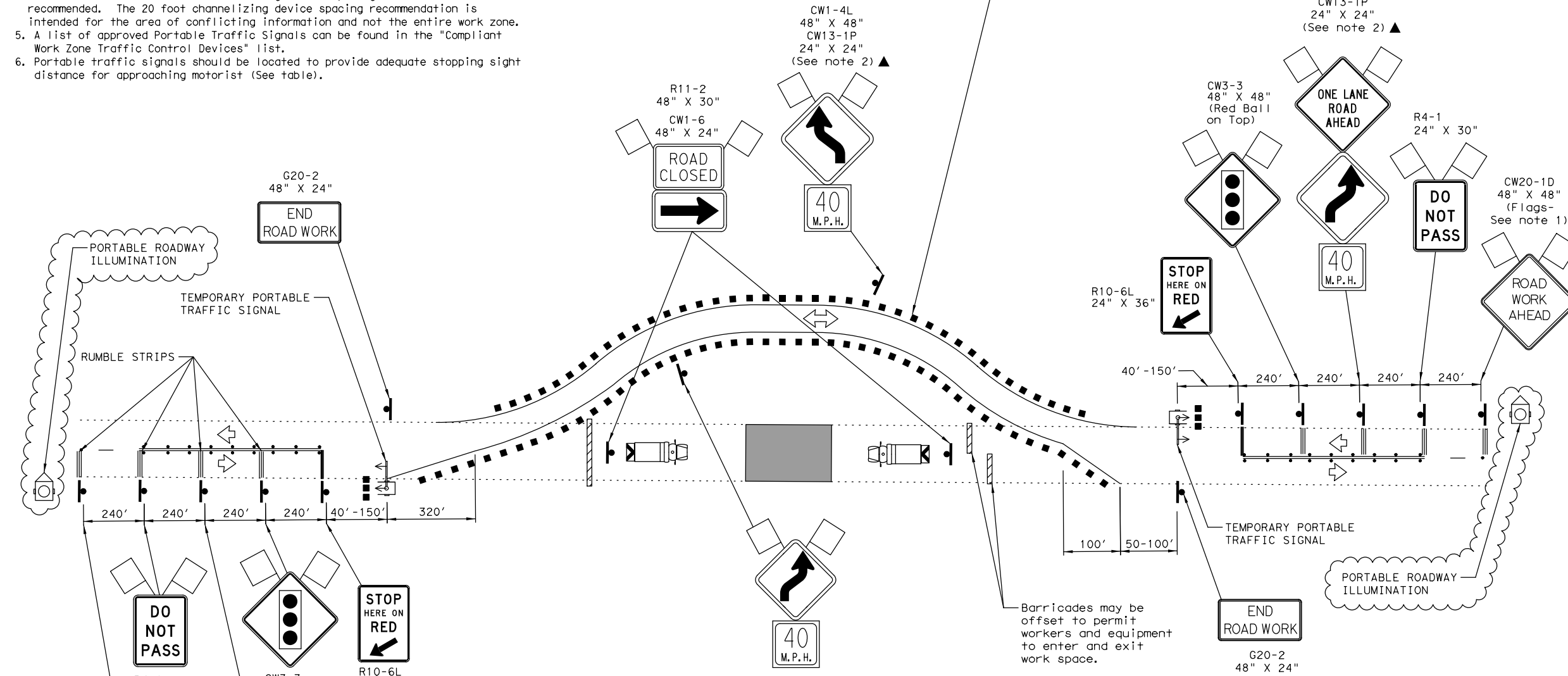
STA 787+00 TO STA 790+00

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
		6	SEE TITLE SHEET		21A
CHK	OEI	STATE	DIST.	COUNTY	
DRN	OEI	TEXAS	ELP	CULBERSON	
CHK	OEI	CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

GENERAL NOTES

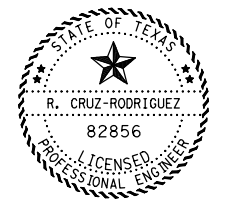
- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- Raised pavement markers shall be placed 40 feet c-c on centerline between DO NOT PASS signs and stop or yield lines.
- For intermediate term situations, when it is not feasible to remove and restore pavement markings, the channelization must be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline. In such locations a maximum channelizing device spacing of 20 feet is recommended. The 20 foot channelizing device spacing recommendation is intended for the area of conflicting information and not the entire work zone.
- A list of approved Portable Traffic Signals can be found in the "Compliant Work Zone Traffic Control Devices" list.
- Portable traffic signals should be located to provide adequate stopping sight distance for approaching motorist (See table).

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Sign		Traffic Flow
	Flag		Temporary or Portable Traffic Signal
	Raised Pavement Markers Ty II-AA		Portable roadway Illumination



- NOTES:
- CONTRACTOR TO PROVIDE ACCESS TO CONSTRUCTION PLAN PRIOR TO STARTING CONSTRUCTION.
 - PLAN SHALL BE APPROVED BY ENGINEER PRIOR TO STARTING CONSTRUCTION.
 - THE PORTABLE ROADWAY ILLUMINATION WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO BARRICADES, SIGNS AND TRAFFIC HANDLING PAY ITEM.

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TCP LINE DIAGRAM FOR ONE LANE TWO-WAY TCP

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	22
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	CONT.	SECT.	JOB HIGHWAY NO.
		0233	05	038 SH 54

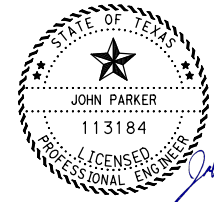
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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

WHEN IT IS ANTICIPATED THAT A STORM EVENT MIGHT BE IMPACTING THE JOB SITE, CONTRACTOR IS TO REMOVE CHANNELIZING DEVICES THAT ARE ALONG THE MAINSTREAM CHANNEL. THIS IS TO AVOID DEVICES BEING WASHED OUT AND IMPACT DOWNSTREAM PROPERTIES.

REFER TO TCP (2-7a) and TCP (2-8b) FOR ADDITIONAL INFORMATION



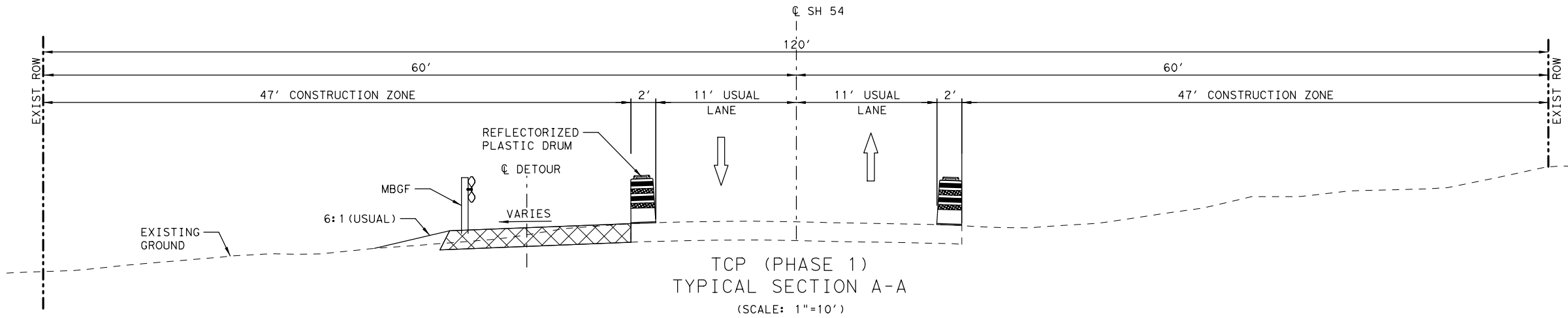
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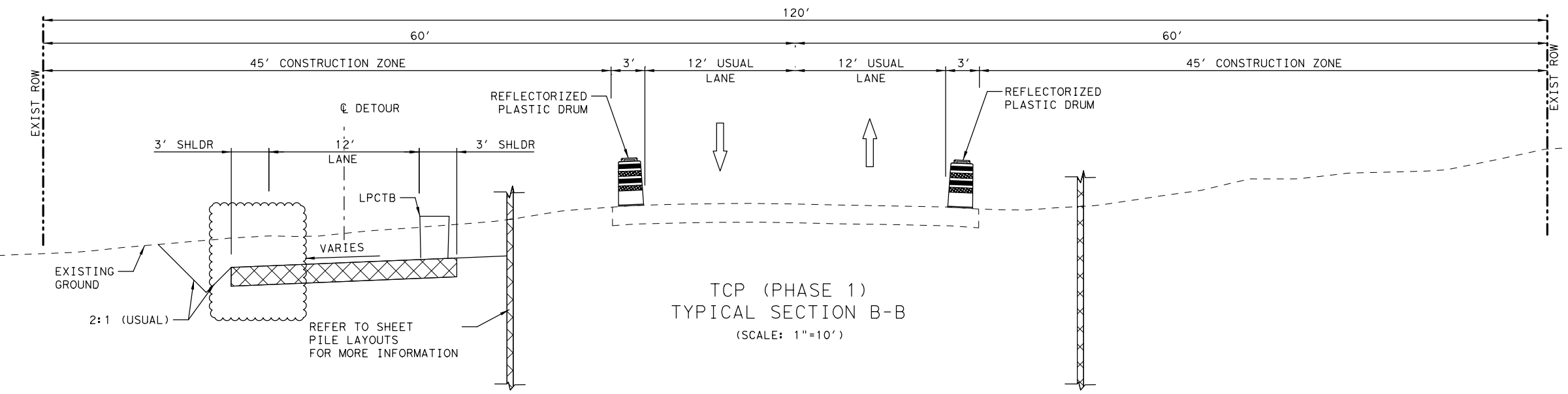
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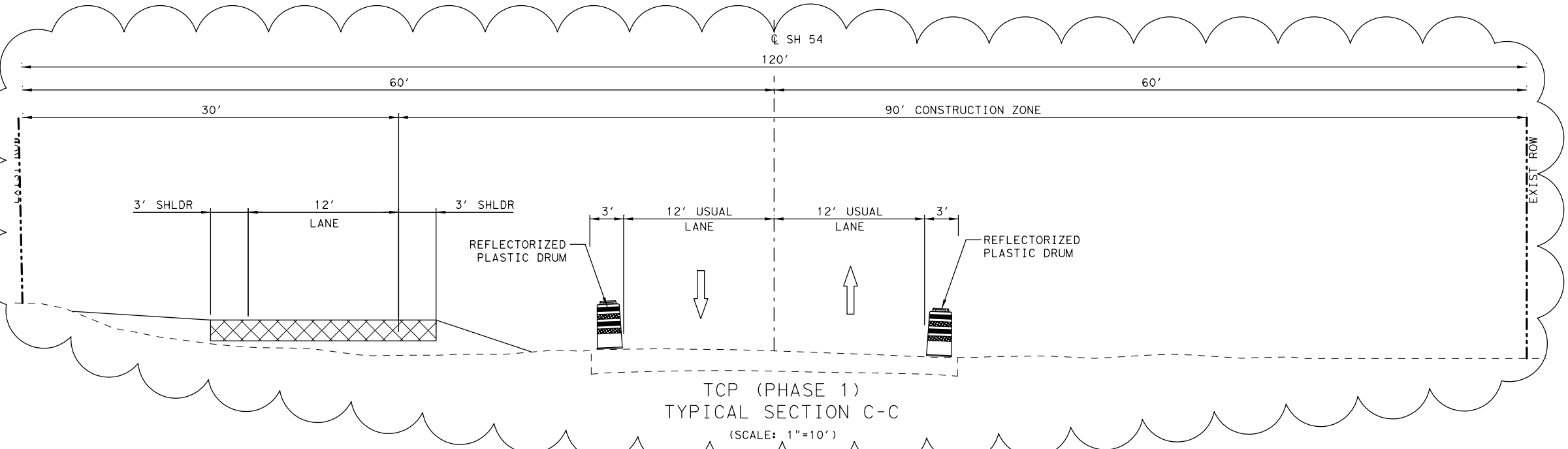
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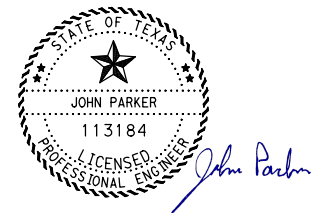
TCP (PHASE 1)
 TYPICAL SECTION A-A
 (SCALE: 1"=10')



TCP (PHASE 1)
 TYPICAL SECTION B-B
 (SCALE: 1"=10')

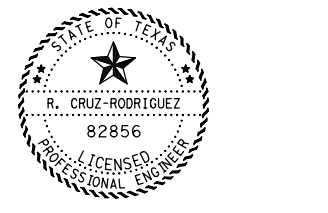


TCP (PHASE 1)
 TYPICAL SECTION C-C
 (SCALE: 1"=10')



REVISI
 10/26 JP 2 TCP

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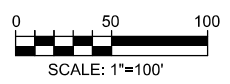
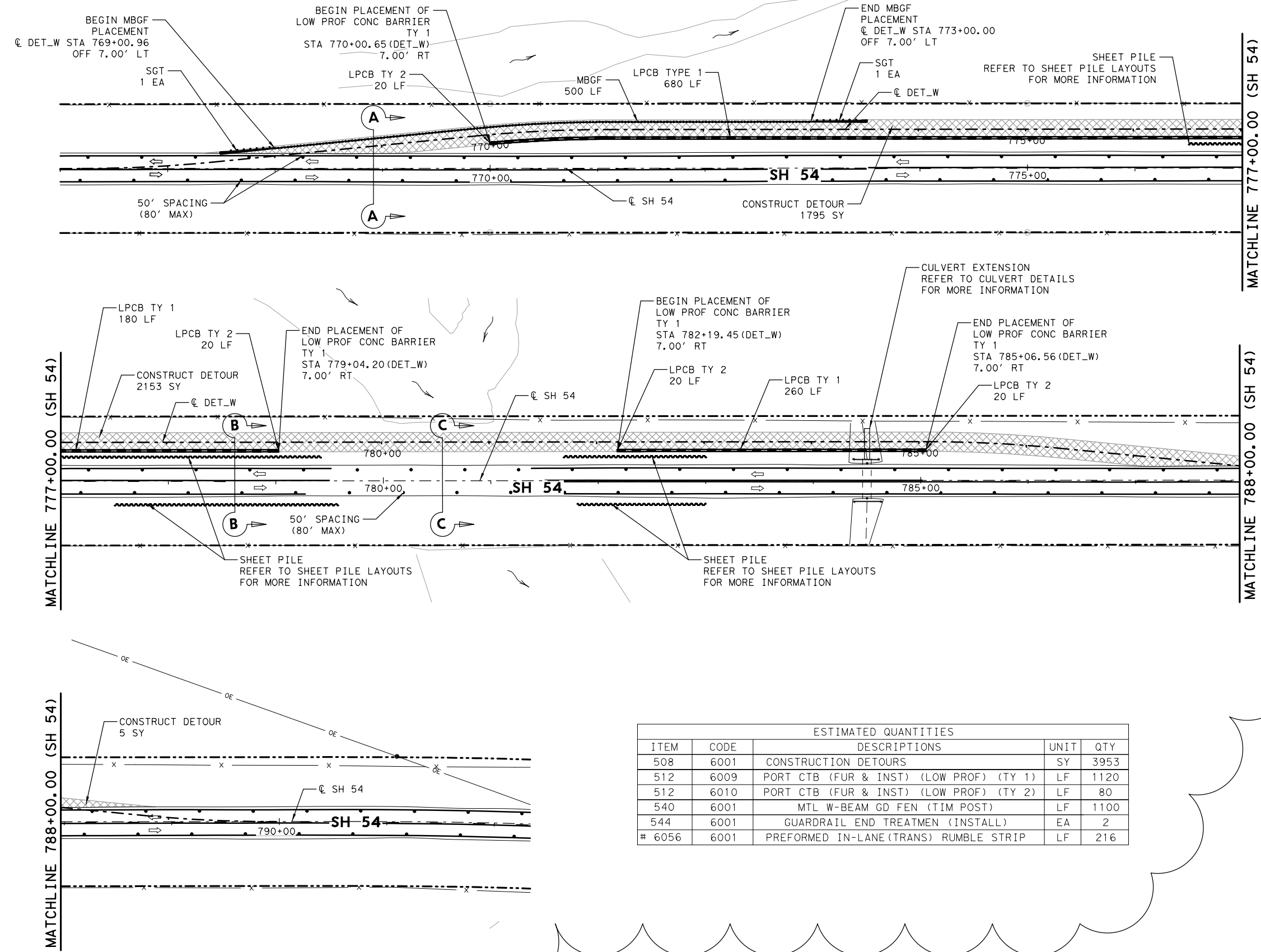
SH 54 @ DIABLO CREEK
 TRAFFIC CONTROL PLAN
 PHASE 1

SHEET 1 OF 2

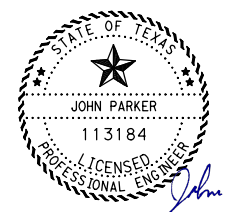
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CHK	OEI	6	SEE TITLE SHEET	23
DRN	OEI	TEXAS	ELP	CULBERSON
CHK	OEI	0233	05 038	SH 54

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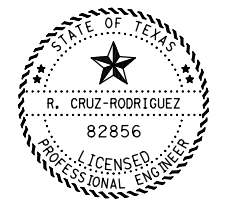
- NOTES:**
1. REFER TO TCP LINE DIAGRAM SHEET FOR LOCATION AND QUANTITY OF PREFORMED IN-LANE (TRANS) RUMBLE STRIP.
 2. QUANTITY SHOWN ON THIS SHEET FOR TABULATION PURPOSES.
 3. REFER TO TCP TYPICAL SECTIONS FOR STRIPING.



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09-27-2022

ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTIONS	UNIT	QTY
508	6001	CONSTRUCTION DETOURS	SY	3953
512	6009	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	LF	1120
512	6010	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	LF	80
540	6001	MTL W-BEAM GD FEN (TIM POST)	LF	1100
544	6001	GUARDRAIL END TREATMEN (INSTALL)	EA	2
# 6056	6001	PREFORMED IN-LANE (TRANS) RUMBLE STRIP	LF	216

TRAFFIC CONTROL LEGEND

- EXISTING TRAFFIC FLOW
- PROPOSED TRAFFIC FLOW
- CONSTRUCTION THIS PHASE
- PVMT. CONSTRUCTED IN PREVIOUS PHASE
- TYPE III BARRICADE
- CHANNELIZING DEVICE (PLASTIC BARRELS/DRUMS)
- LOW PROFILE CONCRETE BARRIER (LPCB)
- TEMPORARY PORTABLE TRAFFIC SIGNAL

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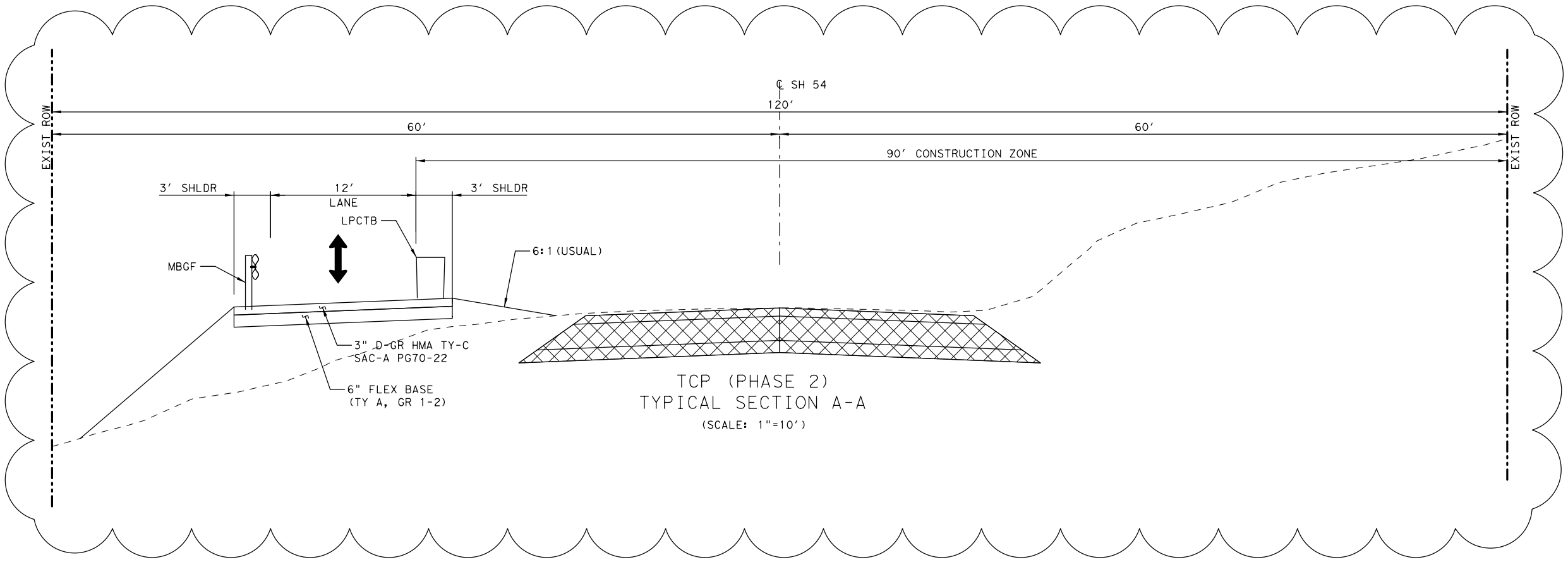
**TRAFFIC CONTROL PLAN
 PHASE 1**

		FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
DSN	OEI	6	SEE TITLE SHEET	24
CHK	OEI	STATE	DIST.	COUNTY
DRN	OEI	TEXAS	ELP	CULBERSON
CHK	OEI	CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

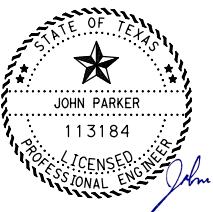
SHEET 2 OF 2

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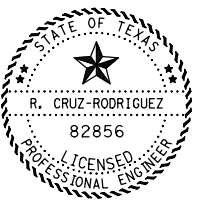
TCP (PHASE 2)
 TYPICAL SECTION A-A
 (SCALE: 1"=10')



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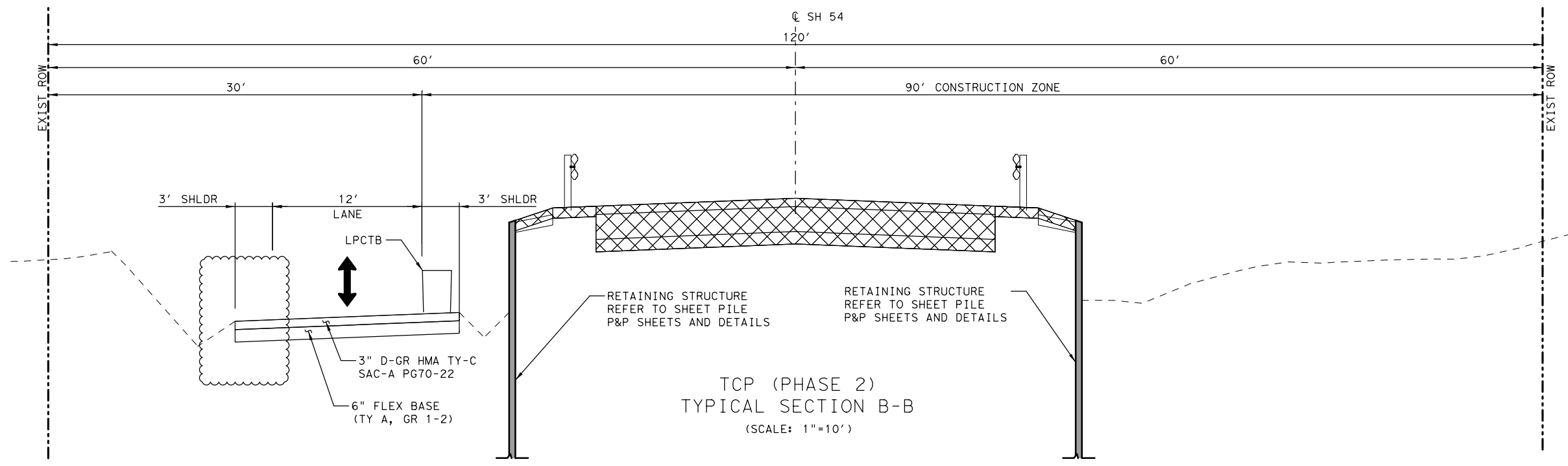


SH 54 @ DIABLO CREEK

TRAFFIC CONTROL PLAN
 PHASE 2

SHEET 1 OF 3

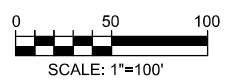
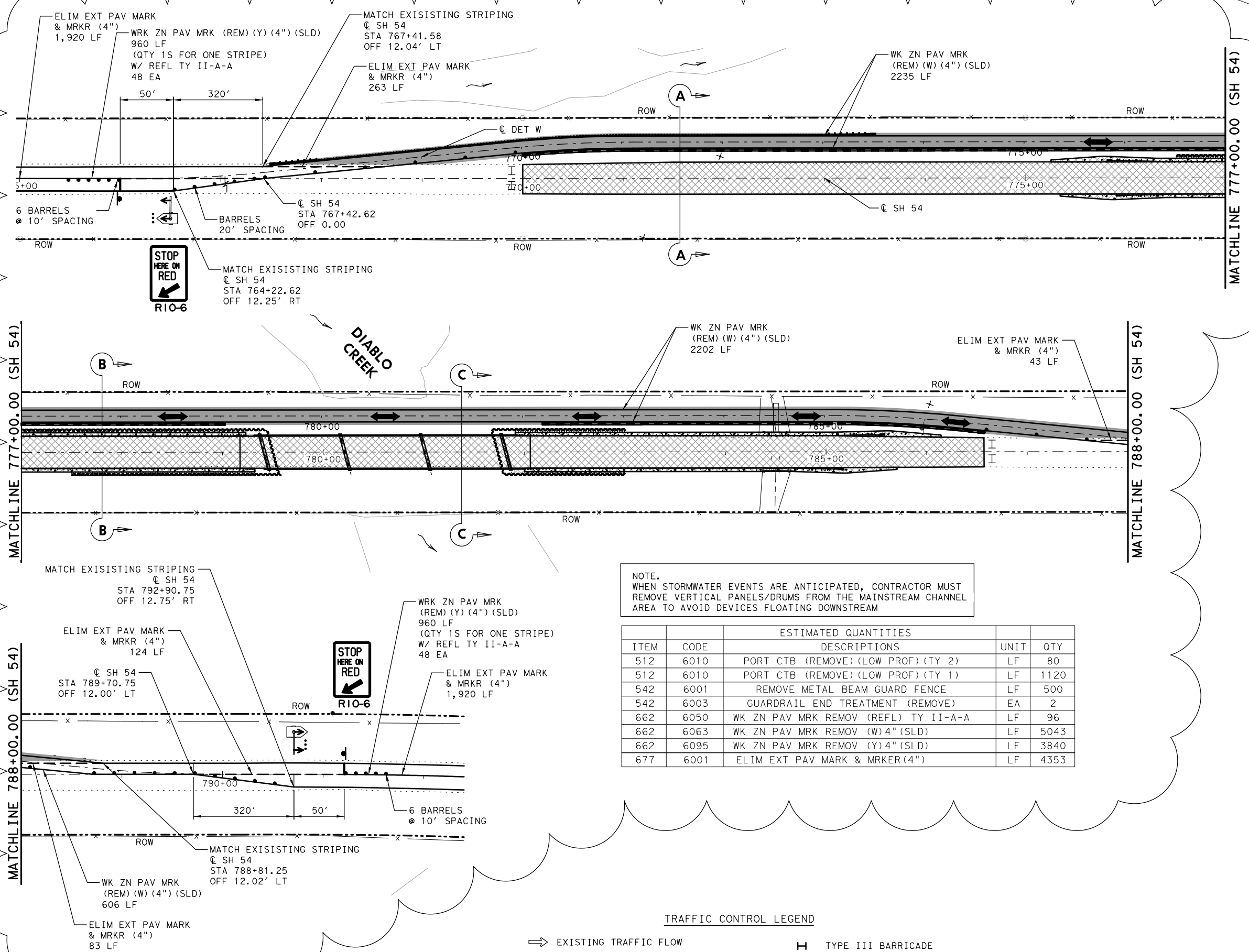
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CHK	OEI	6	SEE TITLE SHEET	25
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54



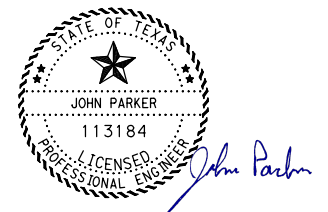
TCP (PHASE 2)
 TYPICAL SECTION B-B
 (SCALE: 1"=10')

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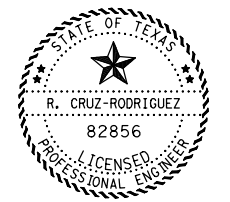


- NOTES:**
1. SEE "TCP LINE DIAGRAM" FOR ADDITIONAL INFORMATION.
 2. SEE TxDOT STANDARD FOR PLACEMENT OF LPCB.
 3. REFER TO TCP TYPICAL SECTIONS FOR STRIPING.



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SH 54 @ DIABLO CREEK

**TRAFFIC CONTROL PLAN
 PHASE 2**

SHEET 3 OF 3

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	27
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

NOTE.
 WHEN STORMWATER EVENTS ARE ANTICIPATED, CONTRACTOR MUST REMOVE VERTICAL PANELS/DRUMS FROM THE MAINSTREAM CHANNEL AREA TO AVOID DEVICES FLOATING DOWNSTREAM

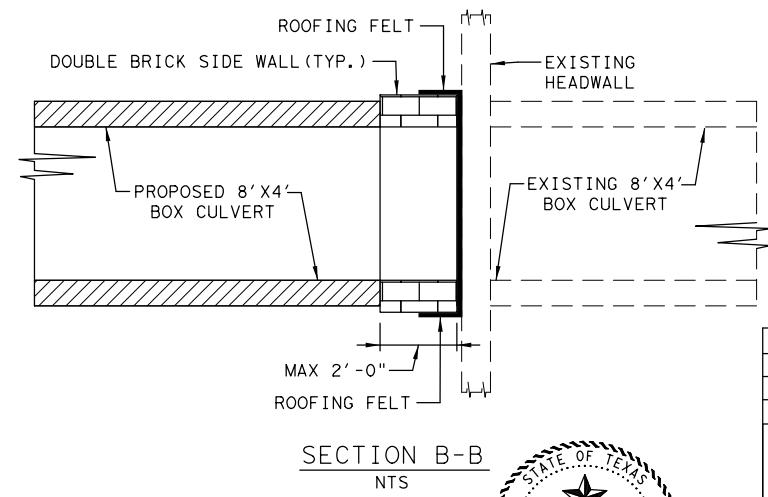
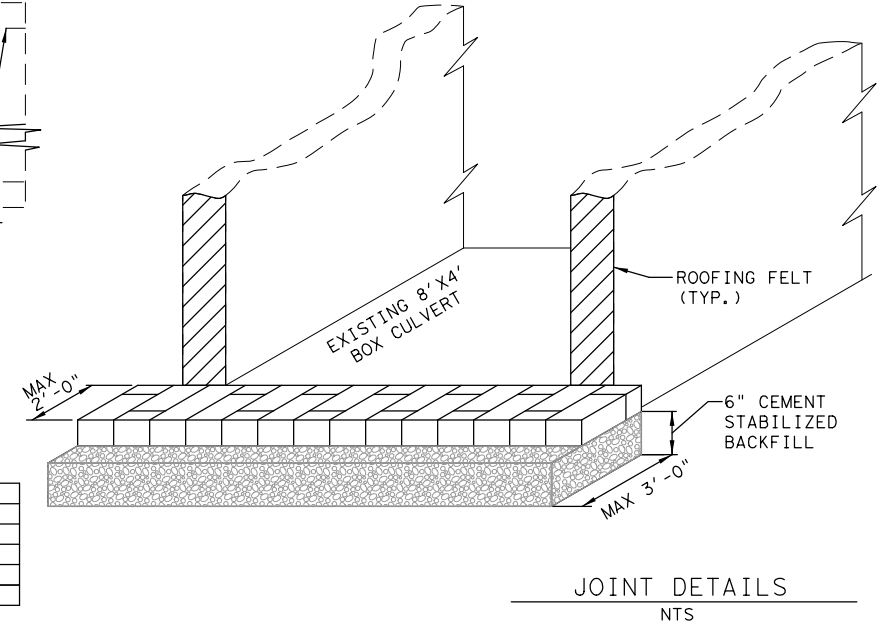
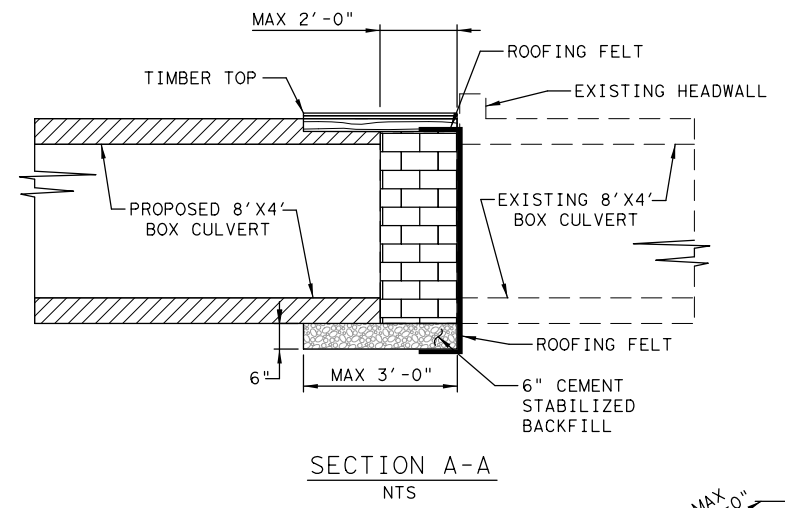
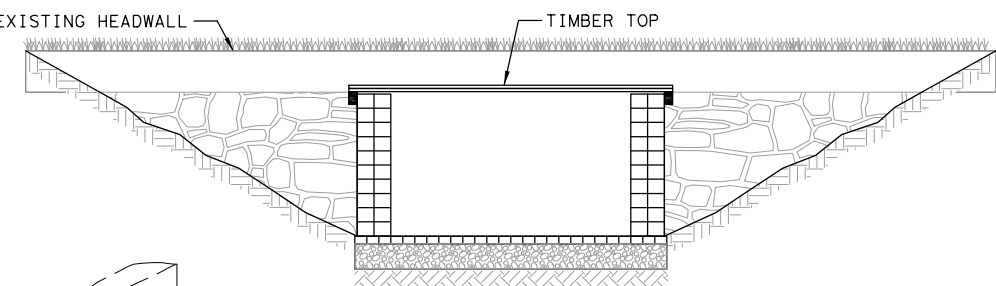
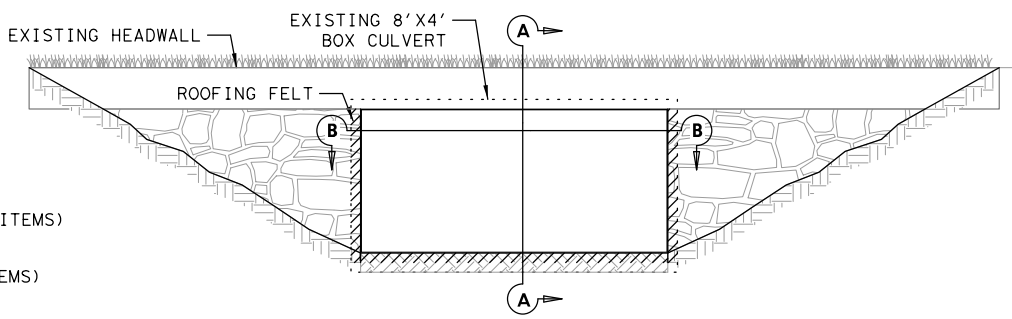
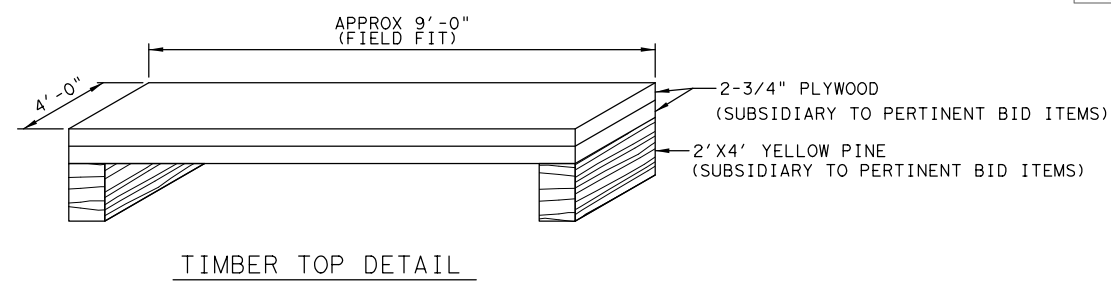
ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTIONS	UNIT	QTY
512	6010	PORT CTB (REMOVE) (LOW PROF) (TY 2)	LF	80
512	6010	PORT CTB (REMOVE) (LOW PROF) (TY 1)	LF	1120
542	6001	REMOVE METAL BEAM GUARD FENCE	LF	500
542	6003	GUARDRAIL END TREATMENT (REMOVE)	EA	2
662	6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	LF	96
662	6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	5043
662	6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	3840
677	6001	ELIM EXT PAV MARK & MRKER (4")	LF	4353

TRAFFIC CONTROL LEGEND

- EXISTING TRAFFIC FLOW
- ➔ PROPOSED TRAFFIC FLOW
- ▨ CONSTRUCTION THIS PHASE
- PVMT. CONSTRUCTED IN PREVIOUS PHASE
- H TYPE III BARRICADE
- CHANNELIZING DEVICE (PLASTIC BARRELS/DRUMS)
- LOW PROFILE CONCRETE BARRIER (LPCB)
- ⬆️⬆️ TEMPORARY PORTABLE TRAFFIC SIGNAL

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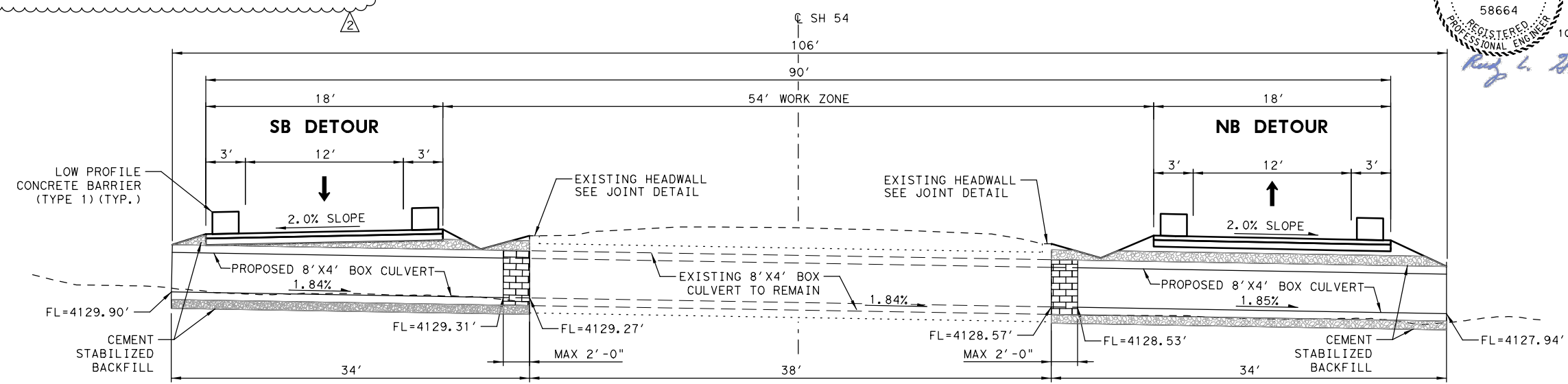
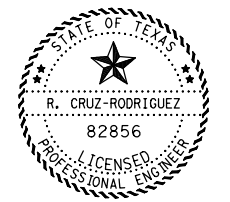
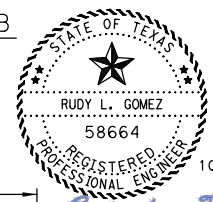


- NOTES:**
1. FLOWABLE BACKFILL TO BE PLACED FOR FULL LENGTH OF EXISTING BOX CULVERT.
 2. ALL TEMPORARY STRUCTURES TO BE REMOVED AT END OF PROJECT.
 3. SEE LPCB-13 LOW PROFILE CONCRETE BARRIER FOR INSTALLATION INFORMATION.
 4. ROOFING FELT TO COVER ALL EXISTING 8'x4' BOX CULVERT SURFACE IN CONTACT WITH TEMPORARY PROPOSED 8'x4' CULVERT. ROOFING FELT IS SUBSIDIARY TO PERTINENT BID ITEMS.
 5. BRICK COLLAR TO BE SUBSIDIARY TO BOX CULVERT EXTENSION (INSTALLATION & REMOVAL)
 6. BACKFILL WITH CEMENT STABILIZED MATERIAL WILL BE REQUIRED FOR ALL STRUCTURES UNDER DETOURS.
 7. FOLLOW BACKFILL DETAIL FOR BOX CULVERTS IN A GRADED OR PAVED AREA INCLUDING DETOURS AS SHOWN ON THE EXCAVATION AND BACKFILL DETAILS (NEXT SHEET).

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ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
400	6005	CEM STABIL BKFL	CY	67
462	6019	CONC BOX CULV (8 FT X 4 FT)	LF	64
480	6001	CLEAN EXIST CULVERTS	EA	1
496	6008	REMOV STR (BOX CULVERT)	LF	64

DATE	BY	REV	REVISION



C/L SH54
STA 784+44.68
EXISTING 8'x4'x38 LF BOX CULVERT
PROPOSED 8'x4'x32 LF, 2-EXTENSIONS RIGHT & LEFT,
W/ BRICK COLLARS
SCALE: 1"=20'

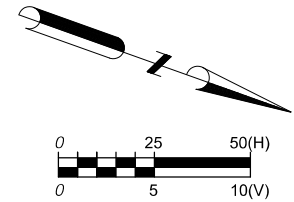
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TEMPORARY CULVERT
EXTENSION DETAIL

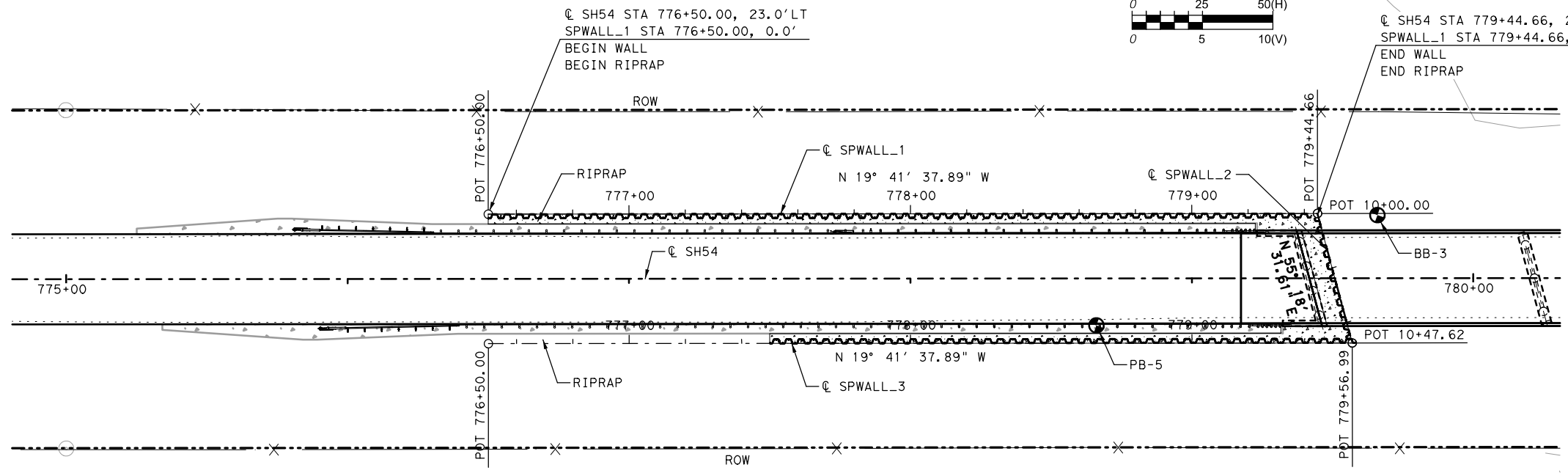
DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	30
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

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- LEGEND**
- SHEET PILE LINE
 - CONC RIPRAP
 - METAL BEAM GUARD FENCE
 - BORING HOLE

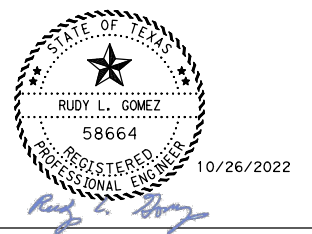


- NOTES:**
1. SEE CONTROL DATA SHEETS FOR INFORMATION.
 2. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR INFORMATION.
 3. REFER TO BRIDGE LAYOUT SHEETS FOR INFORMATION.
 4. SEE REMOVAL LAYOUT SHEETS FOR INFORMATION.
 5. SEE CROSS-SECTIONS FOR SIDE SLOPES AND DETAILS.
 6. REFER TO THE SHEET PILE MISC DETAILS FOR ADDITIONAL DETAILS.
 7. CONTRACTOR SHALL FURNISH STEEL THAT MEETS ASTM A690 (1989b) FOR SHEET PILING.

ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
132	6056	EMBANKMENT (FINAL) (ORD COMP) (TY C2) (DS)	CY	16
407	6006	SHEET PILING (PZ-40)	SF	5410
432	6010	RIPRAP (CONC) (CLB) (5 IN)	CY	24

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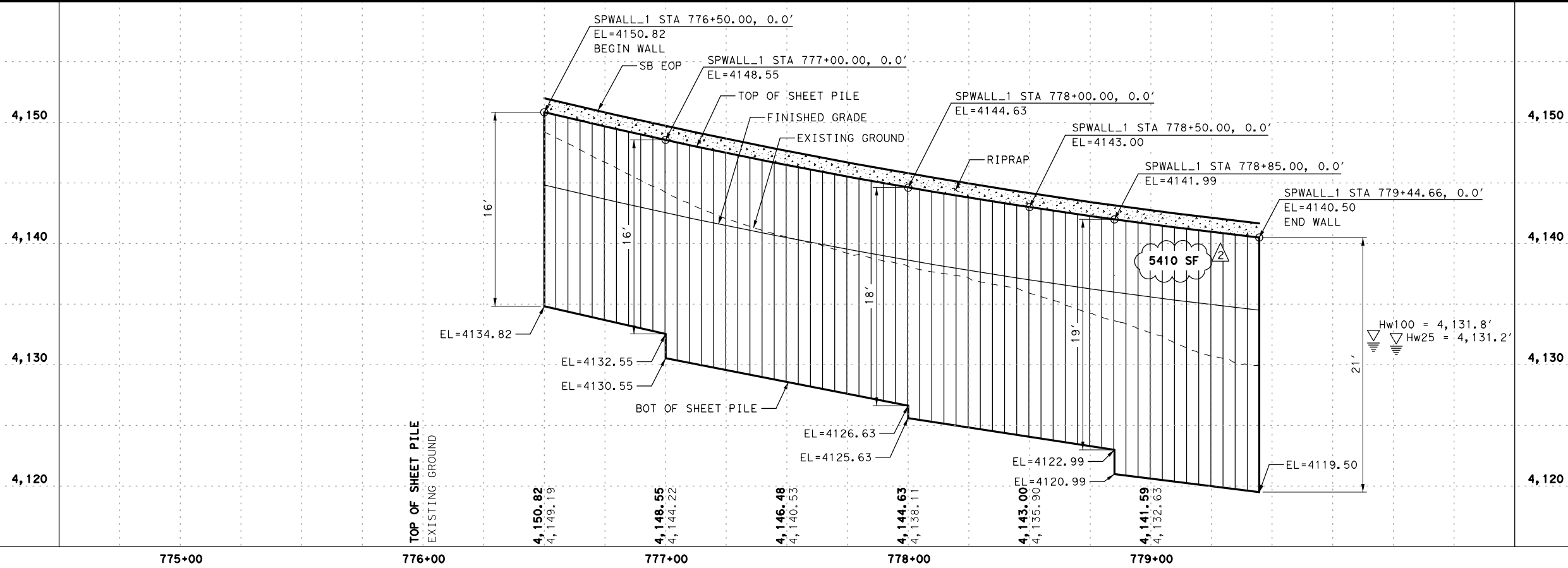
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SH 54 @ DIABLO CREEK

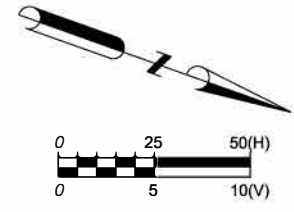
SHEET PILE PLAN & PROFILE SPWALL_1

SHEET 1 OF 5

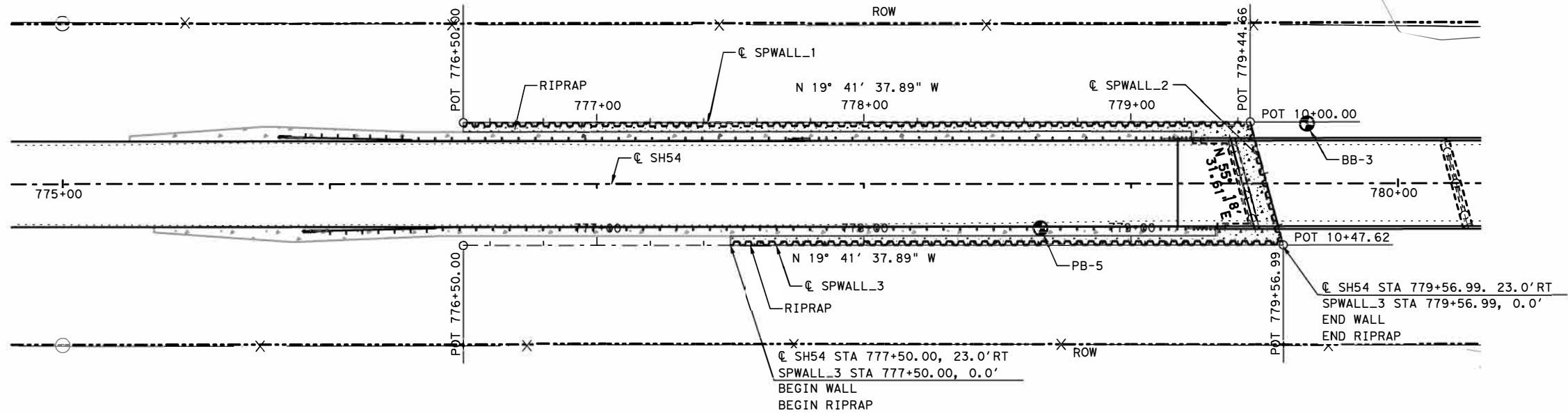


DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
		6	SEE TITLE SHEET	86	
CHK	OEI	STATE	DIST.	COUNTY	
DRN	OEI	TEXAS	ELP	CULBERSON	
CHK	OEI	CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

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- LEGEND**
- SHEET PILE LINE
 - CONC RIPRAP
 - METAL BEAM GUARD FENCE
 - BORING HOLE

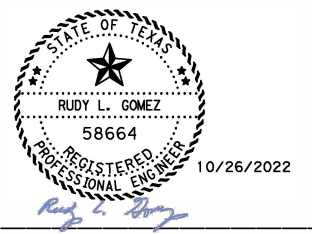


- NOTES:**
1. SEE CONTROL DATA SHEETS FOR INFORMATION.
 2. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR INFORMATION.
 3. REFER TO BRIDGE LAYOUT SHEETS FOR INFORMATION.
 4. SEE REMOVAL LAYOUT SHEETS FOR INFORMATION.
 5. SEE CROSS-SECTIONS FOR SIDE SLOPES AND DETAILS.
 6. REFER TO THE SHEET PILE MISC DETAILS FOR ADDITIONAL DETAILS.
 7. CONTRACTOR SHALL FURNISH STEEL THAT MEETS ASTM A690 (1989b) FOR SHEET PILING.

ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
132	6056	EMBANKMENT (FINAL) (ORD COMP) (TY C2) (DS)	CY	22
407	6006	SHEET PILING (PZ-40)	SF	3800
432	6010	RIPRAP (CONC) (CLB) (5 IN)	CY	17

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 2 REVISED, 10/26/2022

DATE	BY	REV	REVISION



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 AUSTIN, TEXAS 78759
 OMEGAENGINEERS.COM
 TX PE Firm Reg. No. F-2147
 P:512 575 2288 F:281 647 9184

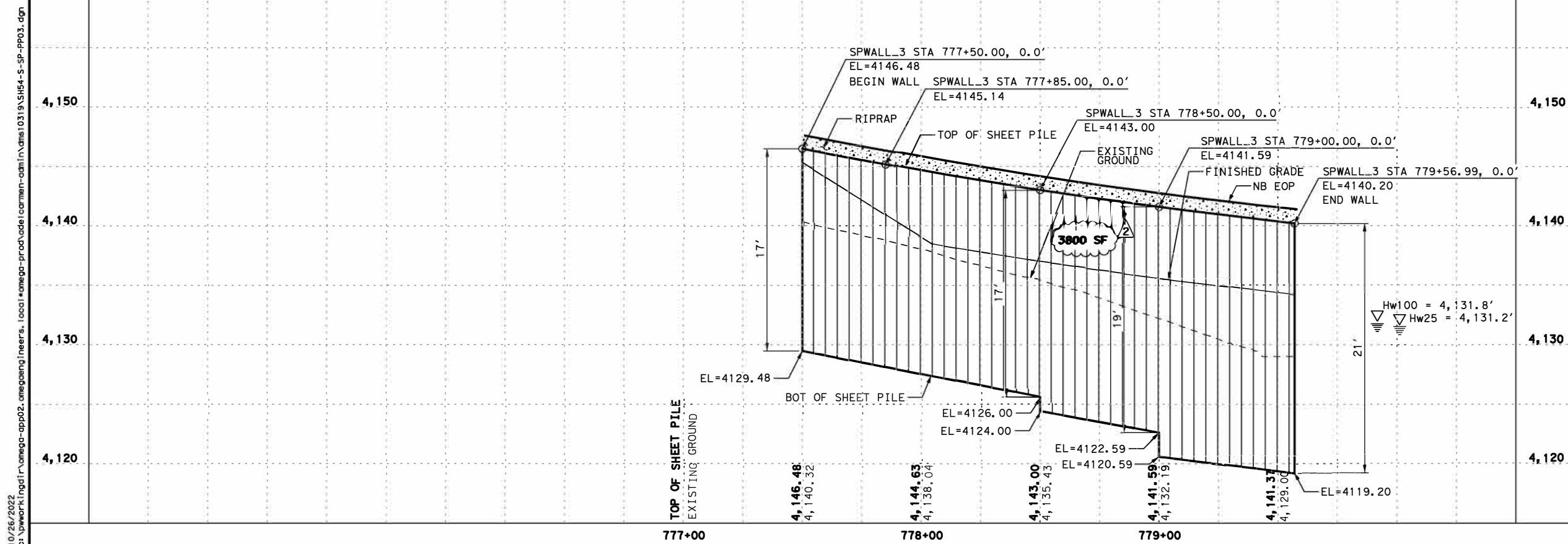


SH 54 @ DIABLO CREEK

**SHEET PILE
 PLAN & PROFILE
 SPWALL_3**

SHEET 2 OF 5

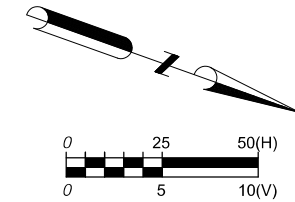
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		6	SEE TITLE SHEET	87
CHK	OEI	STATE	DIST.	COUNTY
DRN	OEI	TEXAS	ELP	CULBERSON
CHK	OEI	CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54



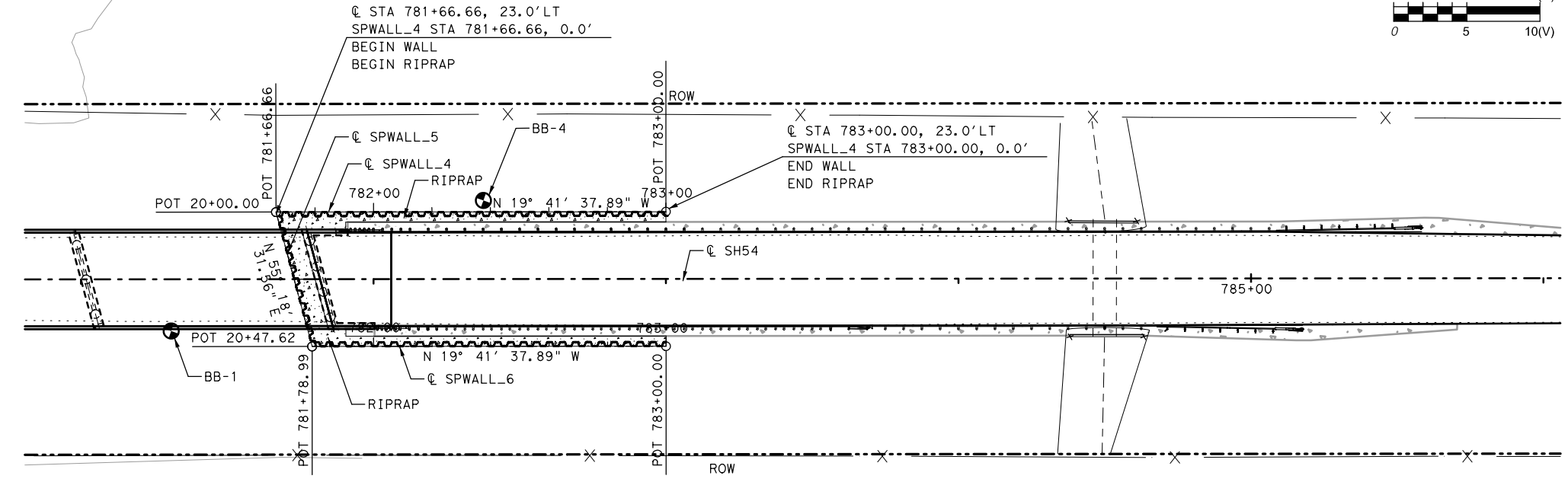
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- LEGEND**
- SHEET PILE LINE
 - CONC RIPRAP
 - METAL BEAM GUARD FENCE
 - BORING HOLE

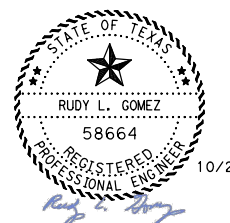


- NOTES:**
1. SEE CONTROL DATA SHEETS FOR INFORMATION.
 2. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR INFORMATION.
 3. REFER TO BRIDGE LAYOUT SHEETS FOR INFORMATION.
 4. SEE REMOVAL LAYOUT SHEETS FOR INFORMATION.
 5. SEE CROSS-SECTIONS FOR SIDE SLOPES AND DETAILS.
 6. REFER TO THE SHEET PILE MISC DETAILS FOR ADDITIONAL DETAILS.
 7. CONTRACTOR SHALL FURNISH STEEL THAT MEETS ASTM A690 (1989b) FOR SHEET PILING.

ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
407	6006	SHEET PILING (PZ-40)	SF	2201
432	6010	RIPRAP (CONC) (CLB) (5 IN)	CY	40

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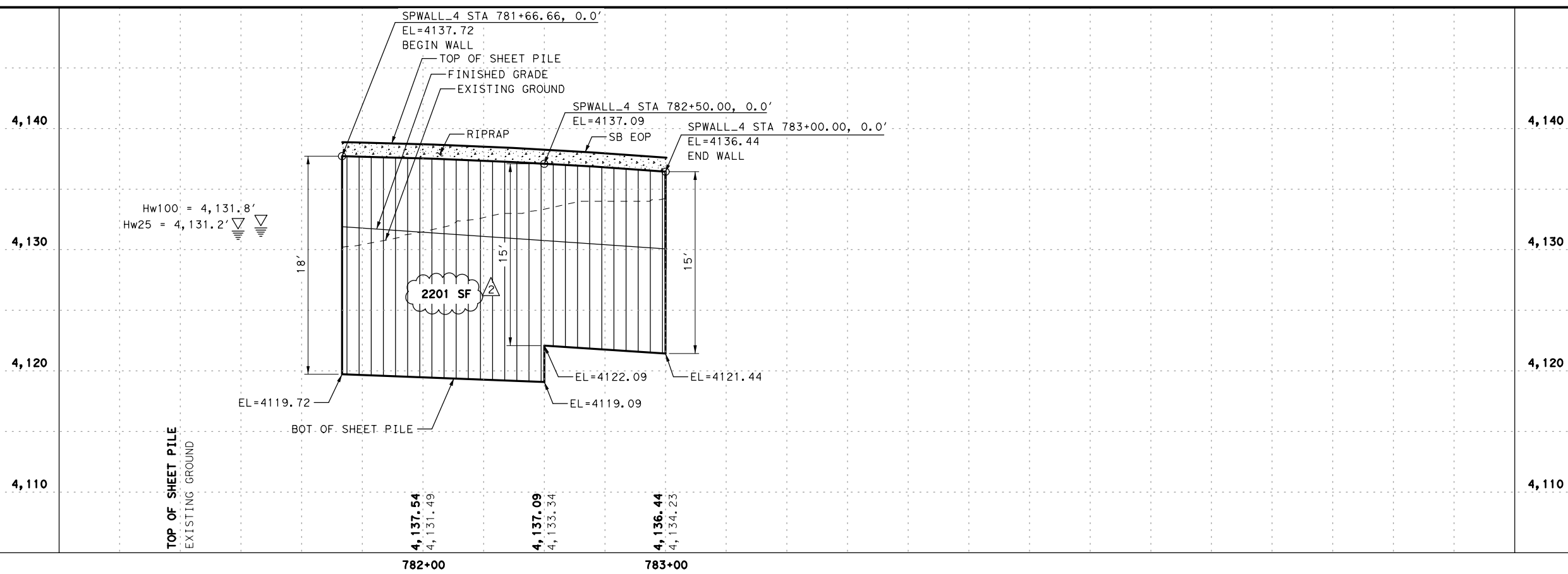


SH 54 @ DIABLO CREEK

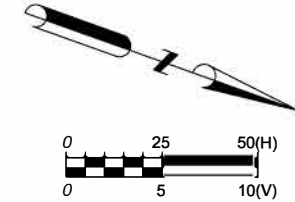
**SHEET PILE
 PLAN & PROFILE
 SPWALL_4**

SHEET 3 OF 5

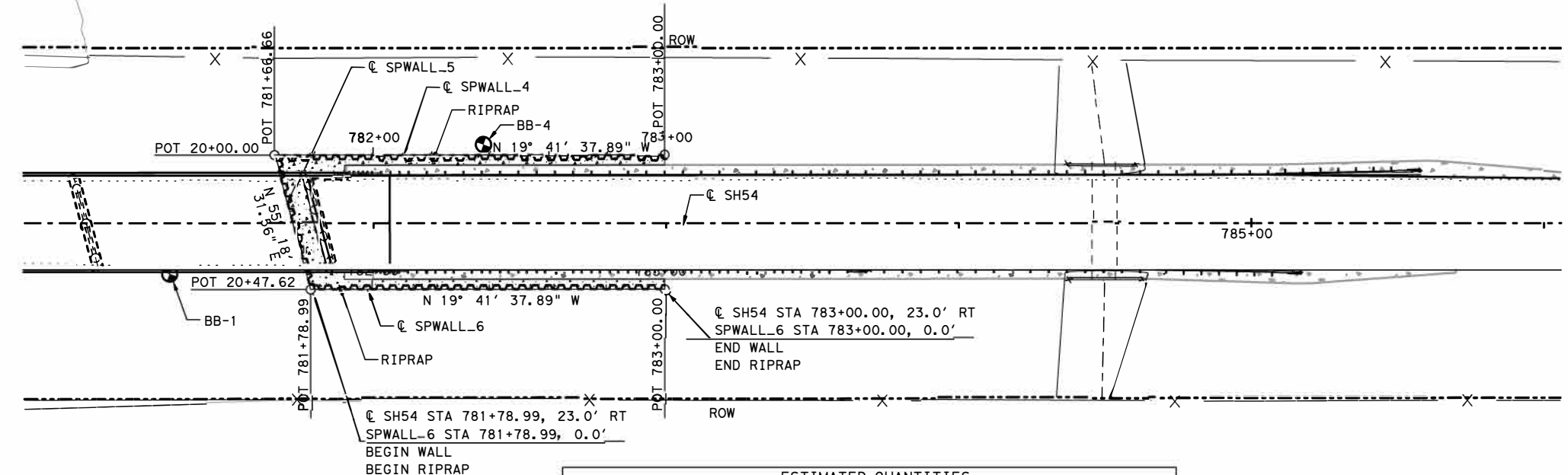
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CHK	OEI	6	SEE TITLE SHEET	88
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54



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- LEGEND**
- SHEET PILE LINE
 - CONC RIPRAP
 - METAL BEAM GUARD FENCE
 - BORING HOLE

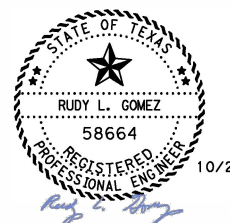


- NOTES:**
1. SEE CONTROL DATA SHEETS FOR INFORMATION.
 2. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR INFORMATION.
 3. REFER TO BRIDGE LAYOUT SHEETS FOR INFORMATION.
 4. SEE REMOVAL LAYOUT SHEETS FOR INFORMATION.
 5. SEE CROSS-SECTIONS FOR SIDE SLOPES AND DETAILS.
 6. REFER TO THE SHEET PILE MISC DETAILS FOR ADDITIONAL DETAILS.
 7. CONTRACTOR SHALL FURNISH STEEL THAT MEETS ASTM A690 (1989b) FOR SHEET PILING.

ESTIMATED QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
407	6006	SHEET PILING (PZ-40)	SF	1642
432	6010	RIPRAP (CONC) (CLB) (5 IN)	CY	10

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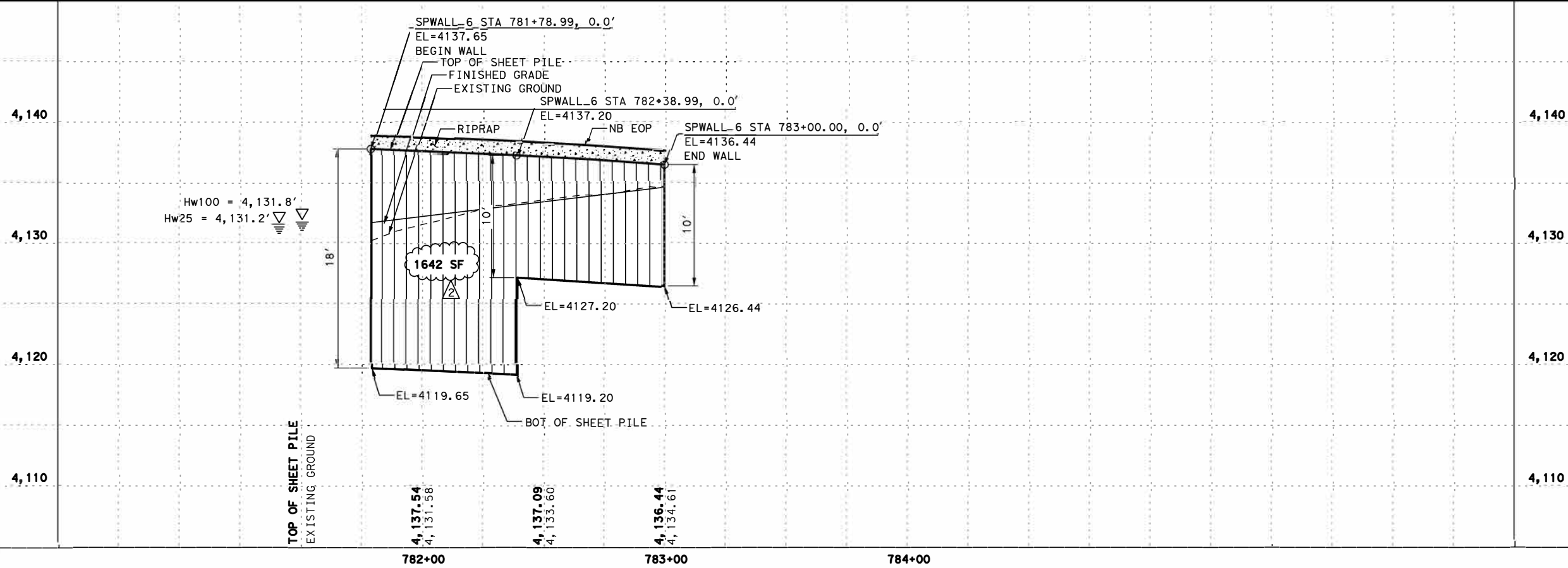
SH 54 @ DIABLO CREEK

**SHEET PILE
 PLAN & PROFILE
 SPWALL_6**

SHEET 4 OF 5

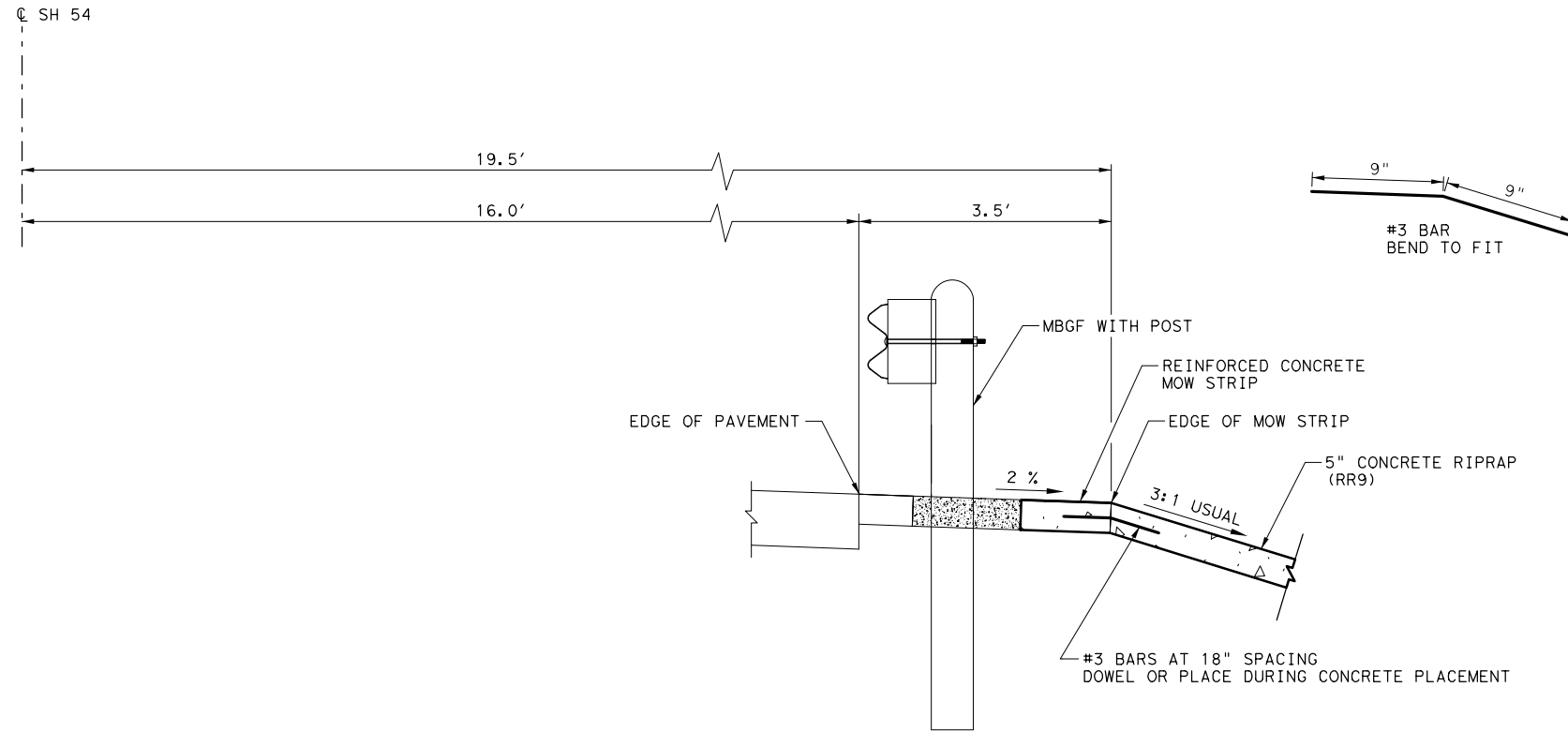
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CHK	OEI	6	SEE TITLE SHEET	89	
DRN	OEI	STATE	DIST.	COUNTY	
CHK	OEI	TX	ELP	CULBERSON	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

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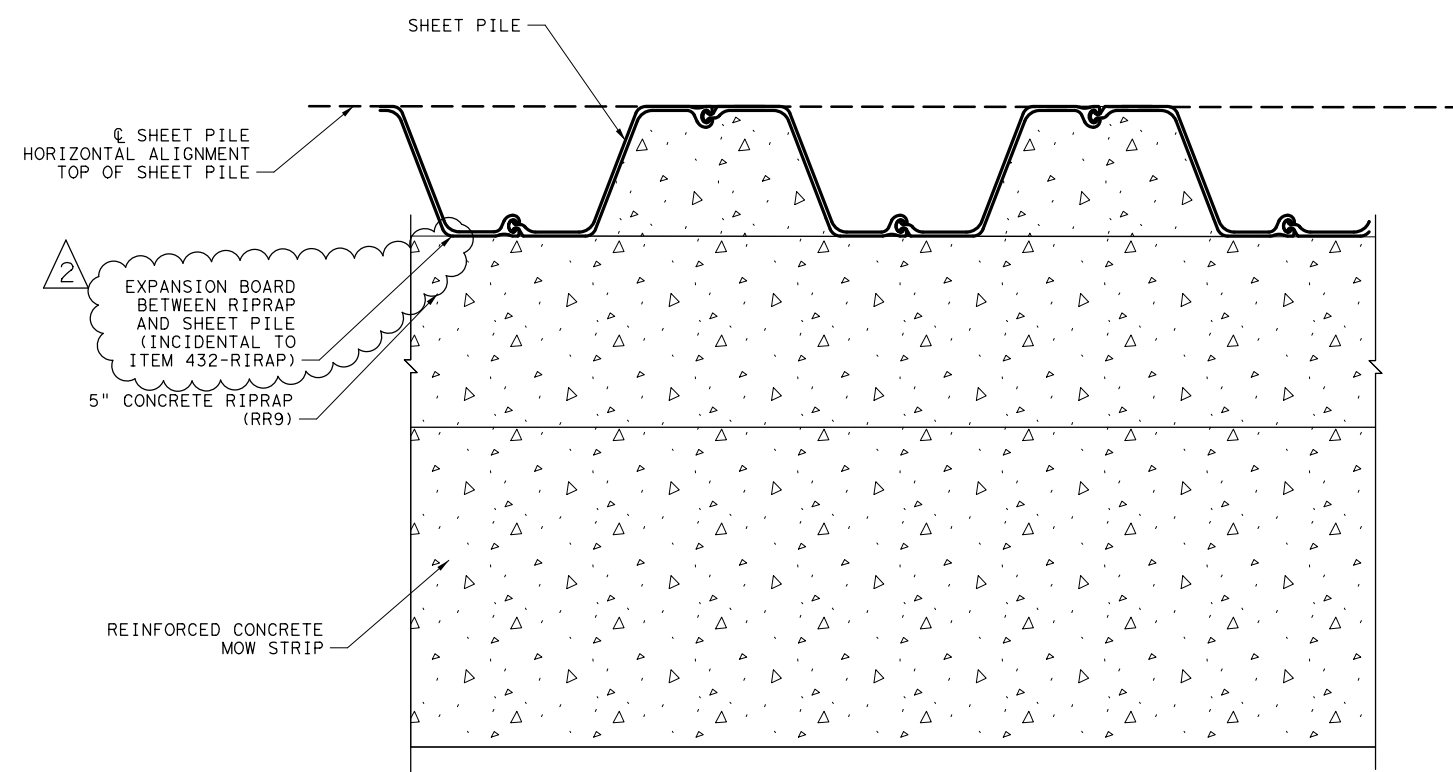


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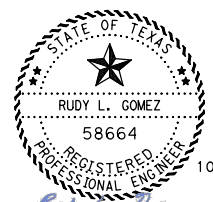
5" CONCRETE RIPRAP (RR9) TO MOW STRIP DETAIL (NTS)



5" CONCRETE RIPRAP (RR9) TO SHEET PILE DETAIL PLAN VIEW (NTS)

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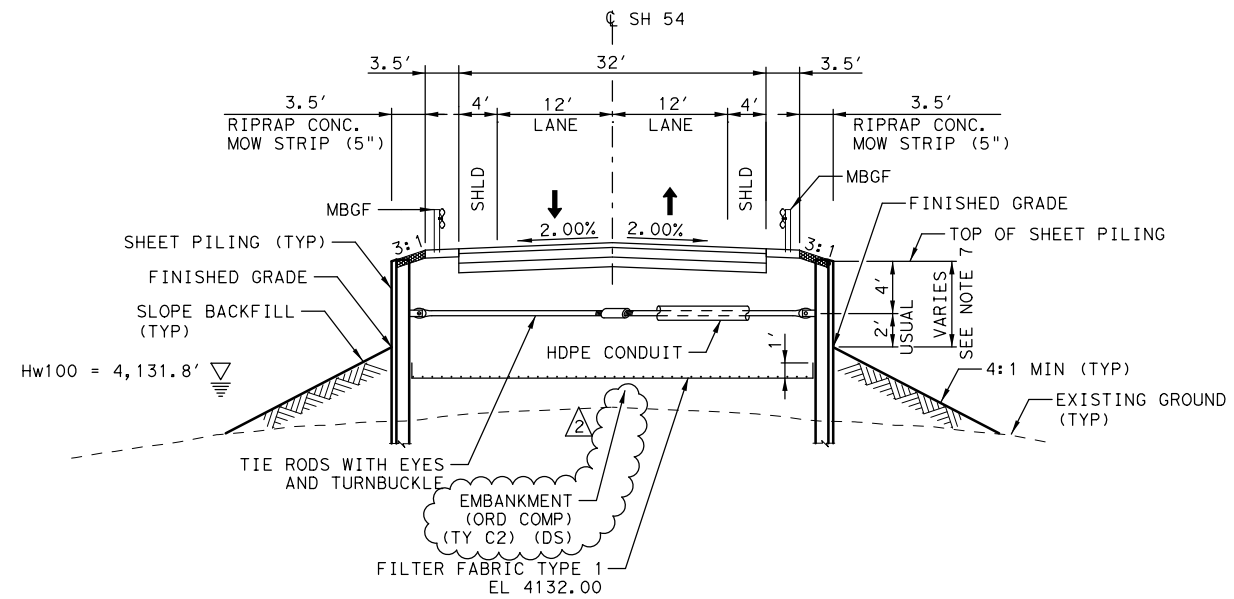


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SHEET PILE MISC DETAILS

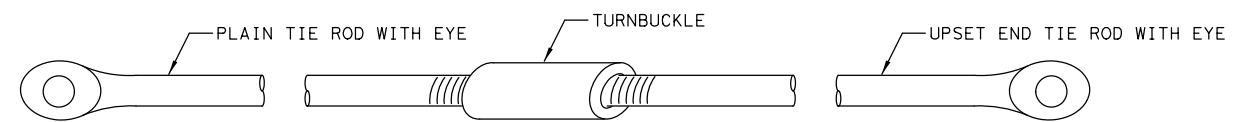
SHEET 2 OF 3

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	92
DRN	OEI	STATE	DIST.	COUNTY
CHK	OEI	TEXAS	ELP	CULBERSON
		CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54



**TYPICAL SECTION
ROADWAY SHEET PILING**
(NTS)

STA 776+50.00 - 779+44.66 LT
 STA 777+50.00 - 779+56.99 RT
 STA 781+66.66 - 783+00.00 LT
 STA 781+78.99 - 783+00.00 RT



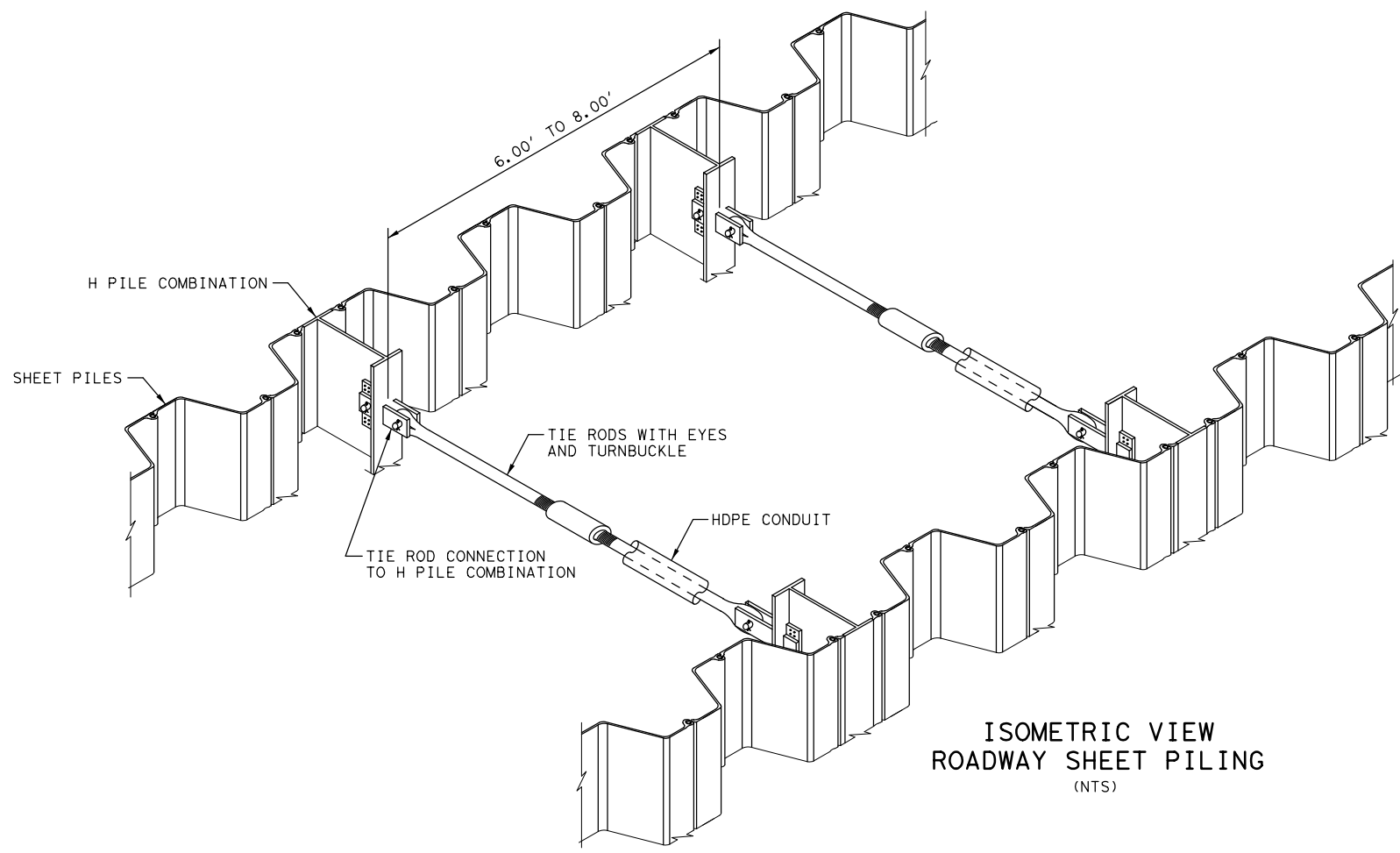
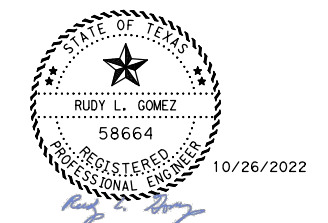
TIE ROD AND TURNBUCKLE
(NTS)

NOTES:

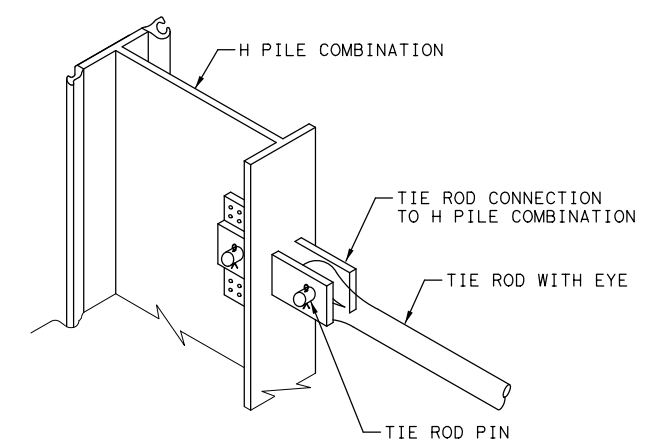
1. TIE RODS AND TURNBUCKLES TO BE ENCASED IN HDPE CONDUIT.
2. PROVIDE TYPE 1 FILTER FABRIC IN ACCORDANCE WITH DMS-6200 AND TO BE INCIDENTAL TO ITEM 407 "SHEET PILING".
3. THE TIE ROD AND TURNBUCKLE, HDPE CONDUIT, H PILE CONNECTION AND ALL OTHER ITEMS REQUIRED FOR THE ATTACHMENT TO SHEET PILE ARE SUBSIDIARY TO ITEM 407 "SHEET PILING".
4. THE CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS AND ANALYSIS OF THE COMPLETE SHEET PILE SYSTEM INCLUDING BUT NOT LIMITED TO SHEET PILE, H PILE CONNECTION, TIE RODS AND ALL OTHER ITEMS ASSOCIATED WITH THE COMPLETE INSTALLATION OF THE SHEET PILE. THIS IS SUBSIDIARY TO ITEM 407 "SHEET PILING".
5. TIE ROD TO BE 2 1/16" DIAMETER STEEL GRADE A572-50 OR EQUIVALENT.
6. H-PILES TO BE W30X191 STEEL GRADE A572-50 OR EQUIVALENT.
7. FINISHED GRADE LINE IS SHOWN ON SHEET PILE PLAN AND PROFILE DRAWINGS.

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**ISOMETRIC VIEW
ROADWAY SHEET PILING**
(NTS)



H PILE CONNECTION
(NTS)

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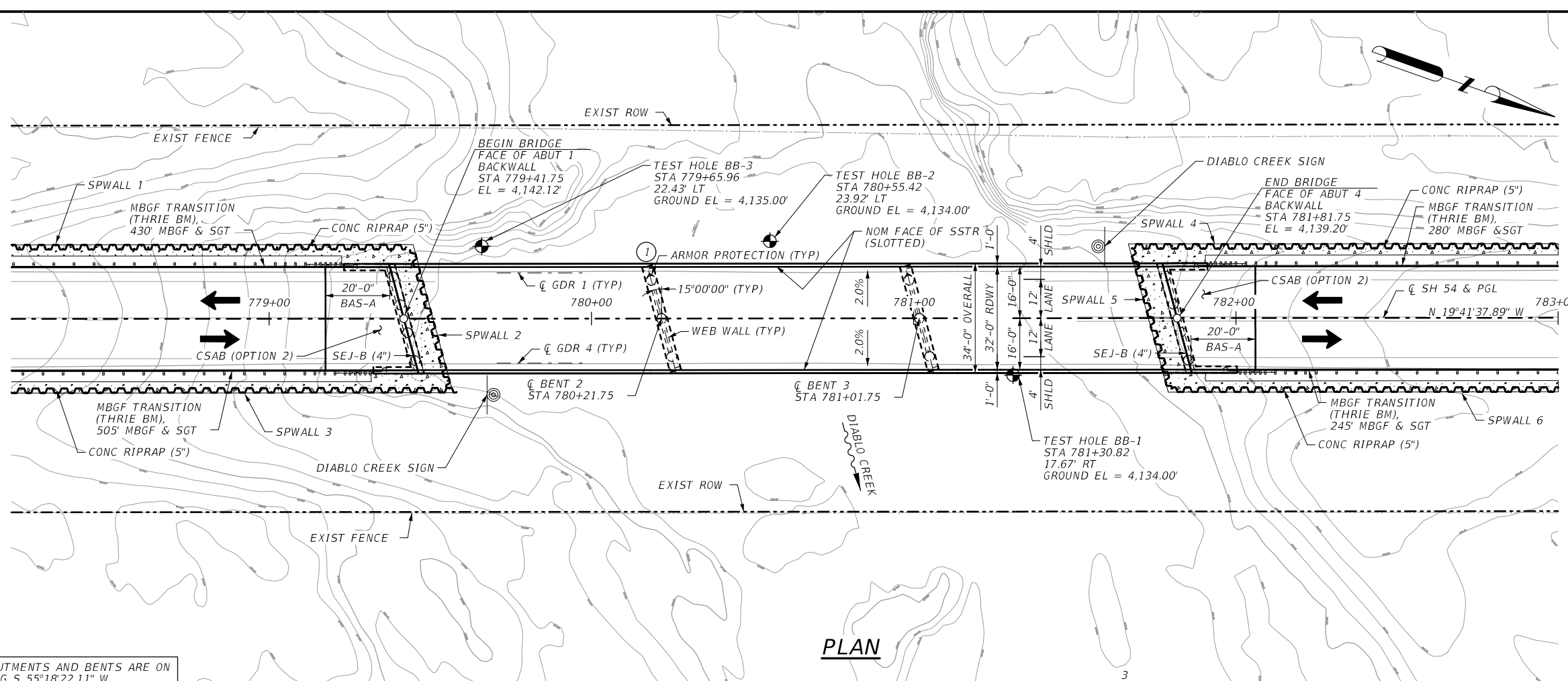
**SHEET PILE
MISC DETAILS**

SHEET 3 OF 3

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
CHK	OEI	6	SEE TITLE SHEET	93
DRN	OEI	TEXAS	ELP	CULBERSON
CHK	OEI	0233	05 038	SH 54

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PLAN

GENERAL NOTES:

- DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION (2020).
- ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND MUST BE CORRECTED FOR GRADE OR CROSS-SLOPE WHERE APPROPRIATE.
- THE "H" VALUES SHOWN ARE ESTIMATED COLUMN HEIGHTS. THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS.
- CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION OR FABRICATION.
- "D" DENOTES CAPS WITH D BARS AND SLOTTED HOLES AT EXTERIOR GIRDS.
- SEE BOREHOLE DETAILS SHEETS FOR DRILLING LOGS.
- SEE SHEET PILE PLAN & PROFILE FOR LIMITS OF RIPRAP.
- EPOXY COATED REINFORCING STEEL SHALL BE USED FOR THE SLAB, RAILS, AND BENT CAPS.
- TYPE II PORTLAND CEMENT TO BE UTILIZED IN MIX DESIGNS.
- ANTI-GRAFFITI COATING FOR RAIL SHALL CONFORM TO BID ITEM 740-6005 ANTI-GRAFFITI COATING (PERMANENT TY III) AND BE APPLIED TO ALL VISIBLE RAIL SURFACES.

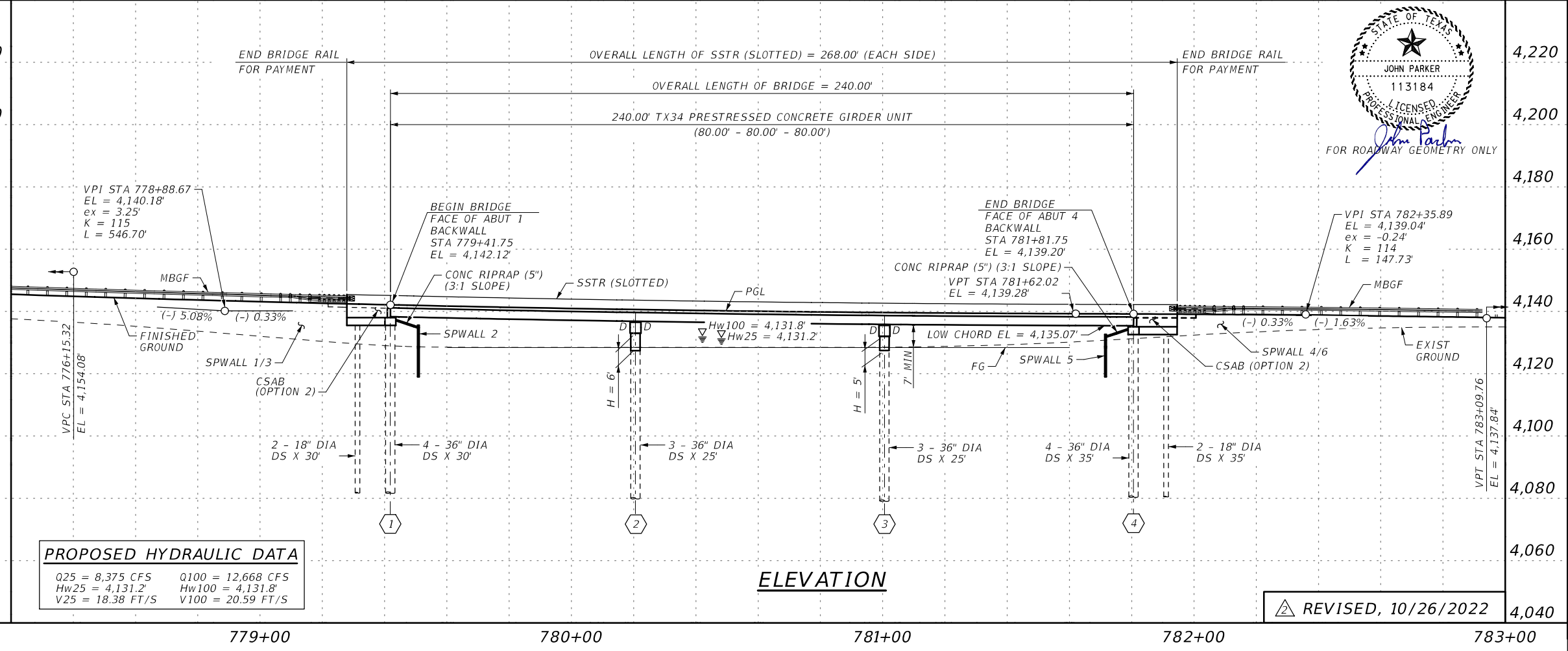
FOUNDATION NOTES:

- ALL DRILLED SHAFTS AT BENTS AND ABUTMENTS ARE DESIGNED FOR COMBINED SKIN FRICTION AND POINT BEARING.
- FOUND DRILLED SHAFTS AT THE LENGTHS SHOWN OR LONGER AS NECESSARY TO PENETRATE TWO SHAFT DIAMETERS INTO VERY DENSE SAND OR GRAVEL.
- THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO STABILIZE THE DRILLED SHAFT HOLES IF GROUND WATER OR CAVING OF THE SOILS IS ENCOUNTERED.

ADT (2020): 371 VPD
 ADT (2040): 519 VPD
 DESIGN SPEED: 55 MPH
 FUNCTIONAL CLASS: RURAL MAJOR COLLECTOR
 NBI NO. 24-055-0-0233-05-047

① ARMOR PROTECTION ON UPSTREAM COLUMNS TO BE SUBSIDIARY TO BID ITEM 420-6038 CL "C" CONC (COLUMN) (HPC).

ALL ABUTMENTS AND BENTS ARE ON BEARING S 55°18'22.11" W.



ELEVATION

PROPOSED HYDRAULIC DATA

Q25 = 8,375 CFS	Q100 = 12,668 CFS
Hw25 = 4,131.2'	Hw100 = 4,131.8'
V25 = 18.38 FT/S	V100 = 20.59 FT/S

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BRIDGE LAYOUT

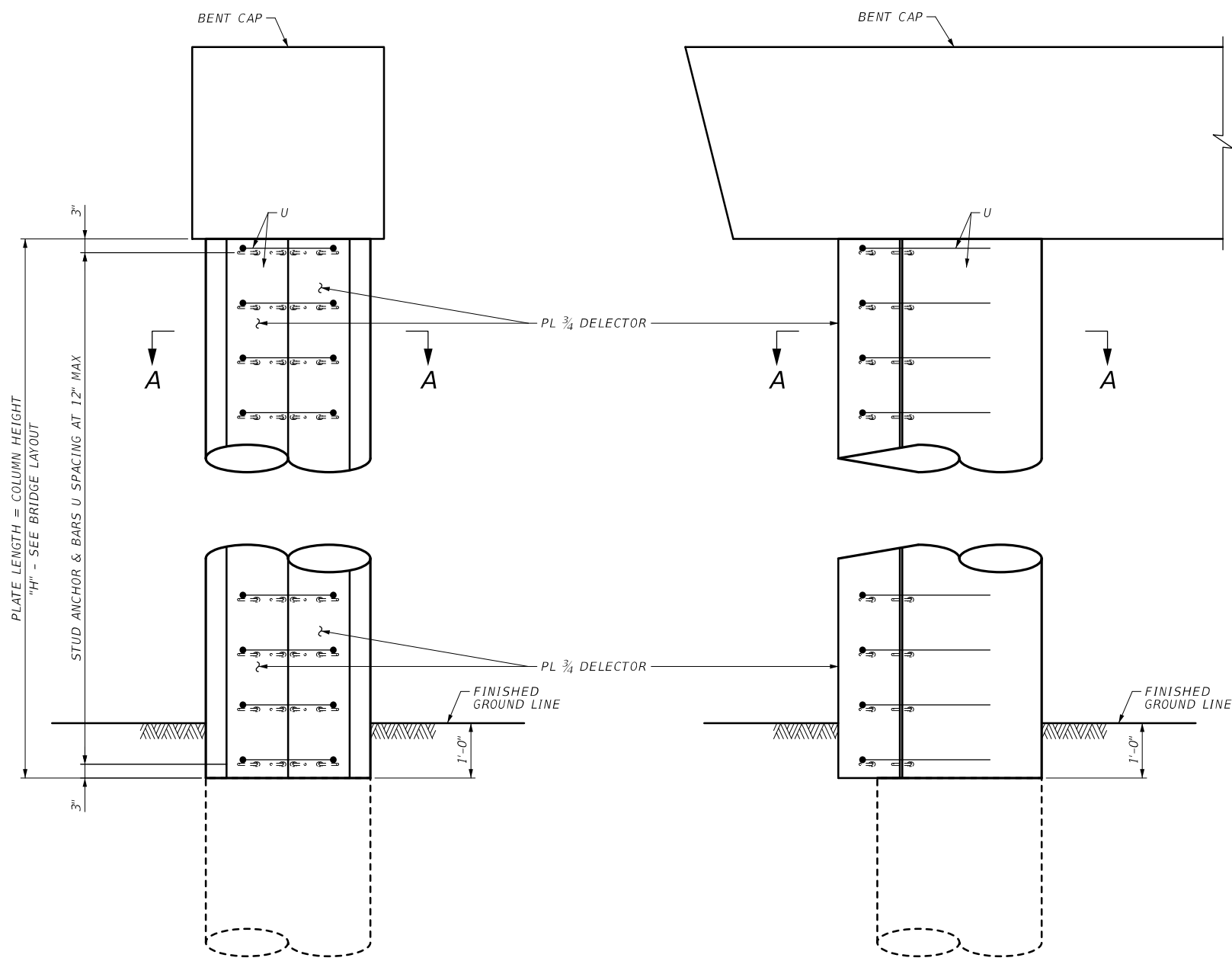
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		6	SEE TITLE SHEET	101	
CHK	OEI	STATE	DIST.	COUNTY	
		TEXAS	ELP	CULBERSON	
DRN	OEI	CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

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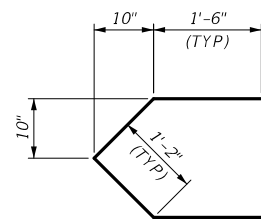


END VIEW

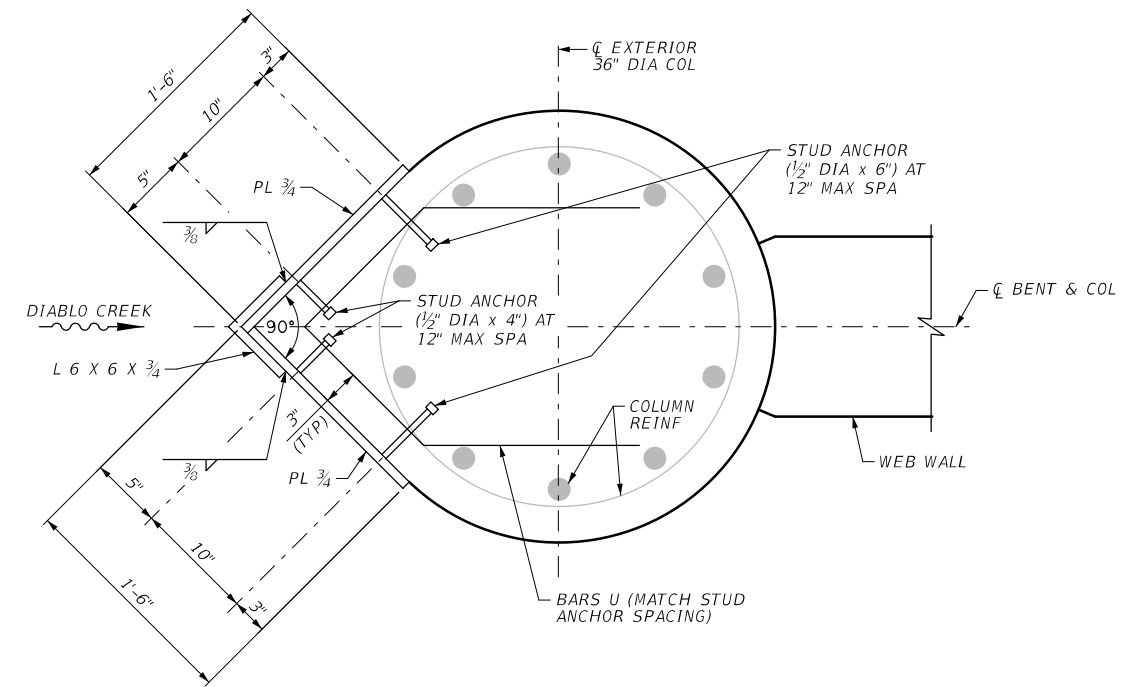
(L 6 X 6 X 3/4 NOT SHOWN FOR CLARITY)

SIDE VIEW

(L 6 X 6 X 3/4 NOT SHOWN FOR CLARITY)



BARS U



SECTION A-A

GENERAL NOTES:

1. SEE BRIDGE LAYOUT FOR FOUNDATION TYPE, SIZE, AND LENGTH.
2. SEE MODIFIED INTERIOR BENTS (BIG-32-15(MOD)) STANDARD FOR COLUMN DETAILS AND NOTES NOT SHOWN.
3. SEE COMMON FOUNDATION DETAILS (FD) STANDARD FOR ALL FOUNDATION DETAILS AND NOTES.
4. BENT COLUMN PROTECTION IS CONSIDERED SUBSIDIARY TO THE PERTINENT BID ITEMS.

MATERIAL NOTES:

1. PROVIDE CLASS C (HPC) CONCRETE.
2. PROVIDE GRADE 60 REINFORCING STEEL.
3. ALL STEEL COMPONENTS SHALL BE A36 GRADE STEEL.
4. WELD STUDS TO THE PLATE IN ACCORDANCE WITH AWS D1.5.

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BENT COLUMN PROTECTION DETAILS

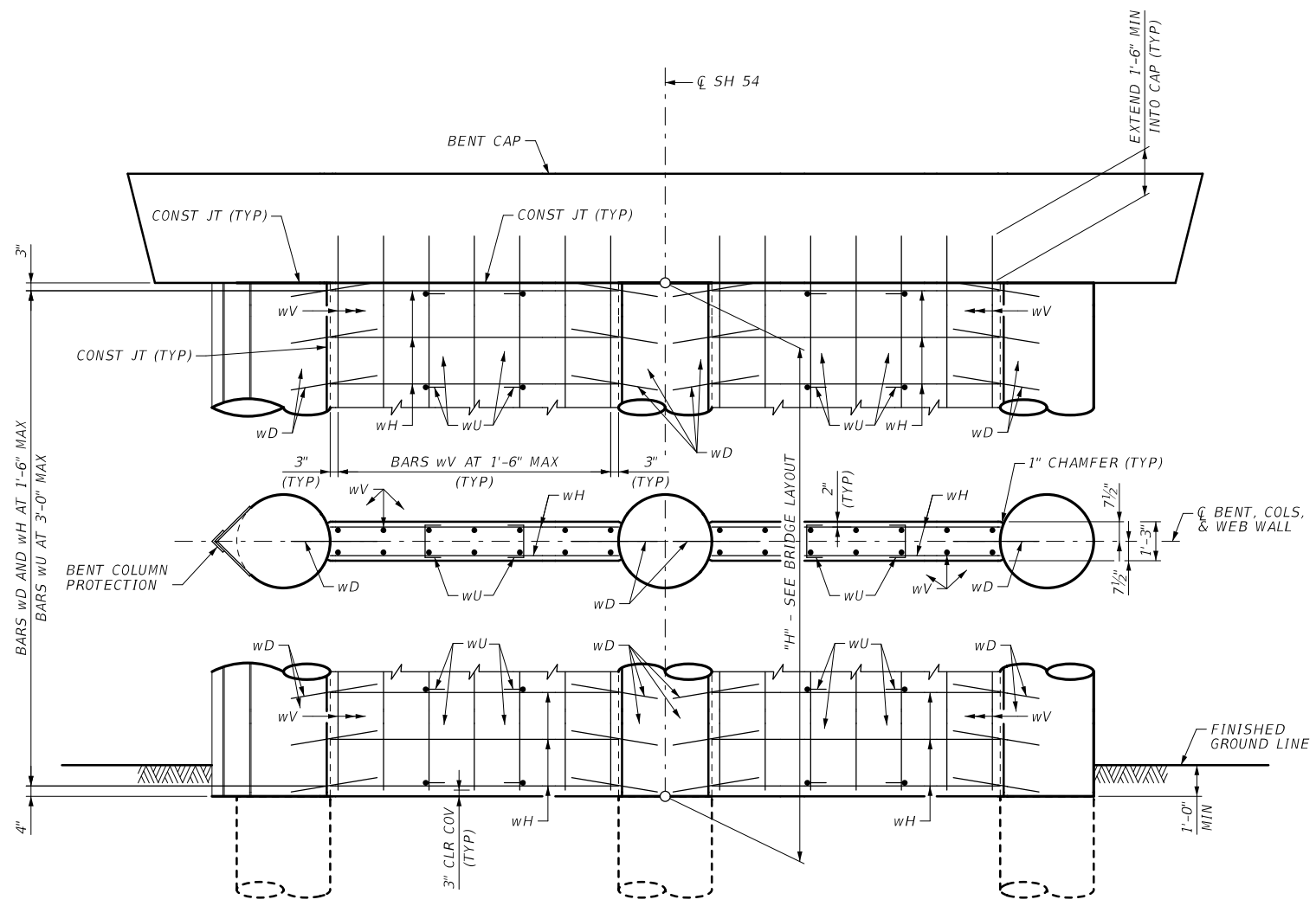
COLUMN PROTECTION SCHEDULE ONE COLUMN				ESTIMATED QUANTITY	
"H"	BARS U (# 4)			REINF STEEL	CL CONC (COLUMN)
FT	NO.	LENGTH	WEIGHT	LB	CY
5	6	5'-4"	22	22	0.1
6	7	5'-4"	25	25	0.1

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DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
CHK	OEI	6	SEE TITLE SHEET	103	
DRN	OEI	STATE	DIST.	COUNTY	
CHK	OEI	TEXAS	ELP	CULBERSON	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0233	05	038	SH 54

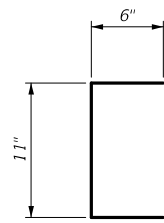
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WEB WALL DETAIL

NOTE: EMBED BARS wD 1'-3" MINIMUM INTO COLUMN. AT CONTRACTOR'S OPTION, BARS wD MAY BE PLACED WITH THE COLUMN, OR MAY BE ATTACHED USING AN ADHESIVE ANCHORAGE SYSTEM WITH THE ANCHORAGE END SLOPED 1:6 INTO COLUMN. AT INTERIOR COLUMNS, THE CONTRACTOR HAS THE OPTION TO PLACE ONE BAR PASSING THROUGH THE FORMS INSTEAD OF TWO OPPOSING BARS.



BARS wU

**WEB WALL SCHEDULE
 ONE WEB WALL**

ESTIMATED QUANTITY
 (2 ~ WEB WALLS)

"H" FT	BARS wD (# 6)			BARS wH (# 6)			BARS wU (6 ~ # 4)		BARS wV (14 ~ # 6)		REINF STEEL	CL CONC (WEBWALL)
	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LB	CY
5	8	2'-9"	34	8	8'-11"	108	1'-11"	8	6'-4"	134	568	4.3
6	10	2'-9"	42	10	8'-11"	134	1'-11"	8	7'-4"	155	678	5.1

GENERAL NOTES:

- SEE BRIDGE LAYOUT FOR FOUNDATION TYPE, SIZE, AND LENGTH.
- SEE COMMON FOUNDATION DETAILS (FD) STANDARD FOR ALL FOUNDATION DETAILS AND NOTES.
- SEE BENT COLUMN PROTECTION DETAILS FOR INFORMATION NOT SHOWN.

MATERIAL NOTES:

- PROVIDE CLASS C CONCRETE (f'c = 3,600 PSI).
- PROVIDE GRADE 60 REINFORCING STEEL.

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BENT WEB WALL DETAILS

DSN	OEI	FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
		6	SEE TITLE SHEET	104
CHK	OEI	STATE	DIST.	COUNTY
DRN	OEI	TEXAS	ELP	CULBERSON
CHK	OEI	CONT.	SECT.	JOB
		0233	05	038
				HIGHWAY NO.
				SH 54

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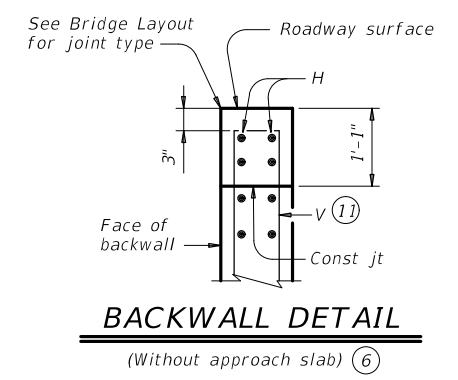
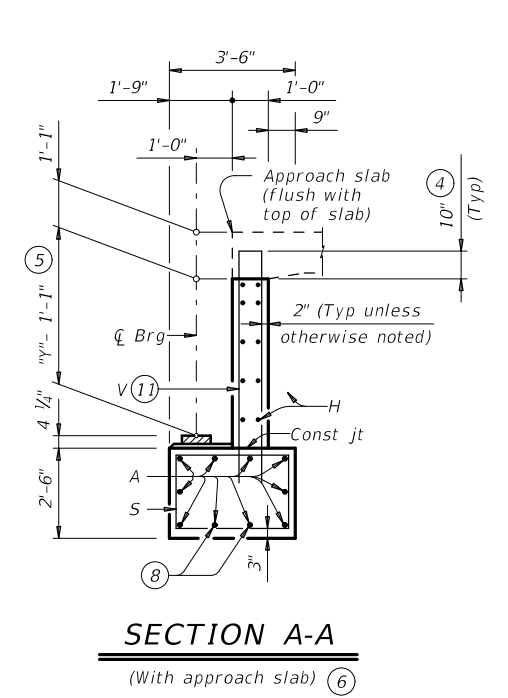
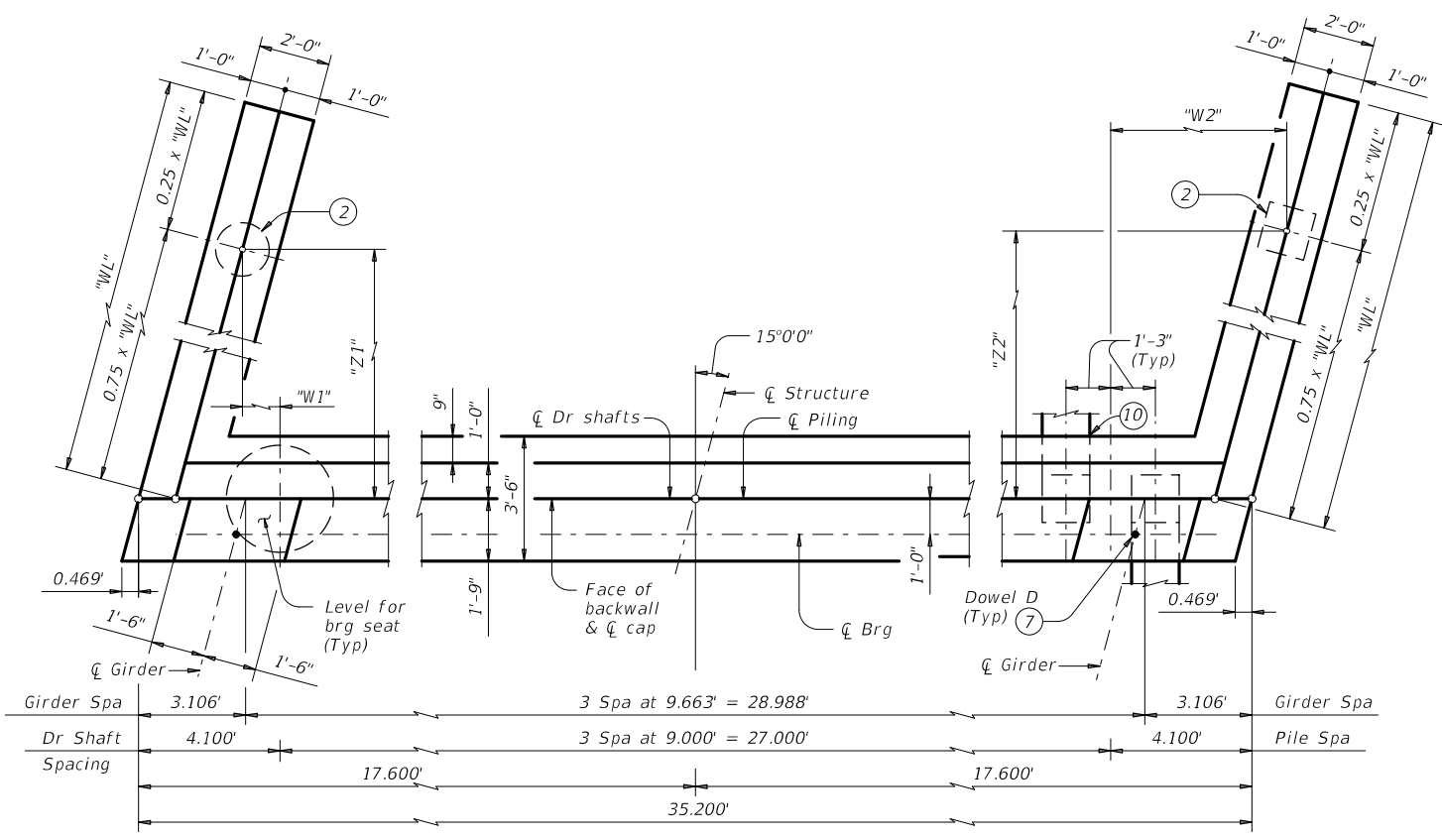
COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for the accuracy of the information shown on this drawing. If you find any errors or omissions, please contact the project engineer.

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TABLE OF FOUNDATION LOADS

Span Length Ft	All Girder Types	
	Tons/Shaft	Tons/Pile
40	53	49
45	57	50
50	60	52
55	63	54
60	67	56
65	70	57
70	73	59
75	76	61
80	80	62
85	83	64
90	86	65
95	89	67
100	92	69
105	95	70
110	98	72
115	101	73
120	105	75



- ① See Table A for variable dimensions based on header slope and girder type.
- ② See Table A to determine if wingwall foundations are required.
- ③ For piling larger than 16" adjust Bars S spacing as required to avoid piling.
- ④ Increase as required to maintain 3" from finished grade.
- ⑤ See Span details for "Y" value.
- ⑥ See Bridge Layout to determine if approach slab is present.
- ⑦ Omit Dowels D at end of multi-span unit. Adjust reinforcing steel total accordingly.
- ⑧ With pile foundations, move Bars A shown to clear piles.
- ⑨ Spacing based on girder type:
 Tx28 ~ 3 spaces at 1'-0" Max
 Tx34 ~ 3 spaces at 1'-0" Max
 Tx40 ~ 4 spaces at 1'-0" Max
 Tx46 ~ 4 spaces at 1'-0" Max
 Tx54 ~ 5 spaces at 1'-0" Max
- ⑩ See Detail A on FD standard.
- ⑪ Field bend as needed to clear piles.
- ⑫ Negative values for the "W1" dimension indicates a wingwall foundation on the other side of the cap foundation from what is shown in plan view. See Detail A.

GENERAL NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications.
 See Bridge Layout for header slope and foundation type, size and length.
 See Common Foundation Details (FD) standard sheet for all foundation details and notes.
 See Concrete Riprap (CRR) standard sheet or Stone Riprap (SRR) standard sheet for riprap attachment details, if applicable.
 See applicable rail details for rail anchorage in wingwalls.
 Details are drawn showing right forward skew. See Bridge Layout for actual skew direction.
 These abutment details may be used with standard SIG-32-15 only.

Cover dimensions are clear dimensions, unless noted otherwise.
 Reinforcing bar dimensions shown are out-to-out of bar.

MATERIAL NOTES:
 Provide Class C concrete (f'c = 3,600 psi).
 Provide Class C (HPC) concrete if shown elsewhere in the plans.
 Provide Grade 60 reinforcing steel.
 Galvanized dowel bars D.

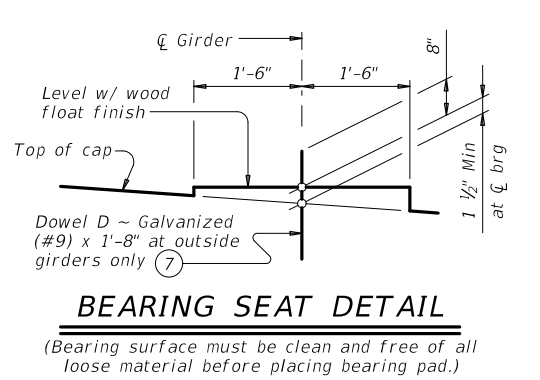
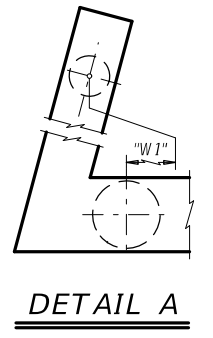
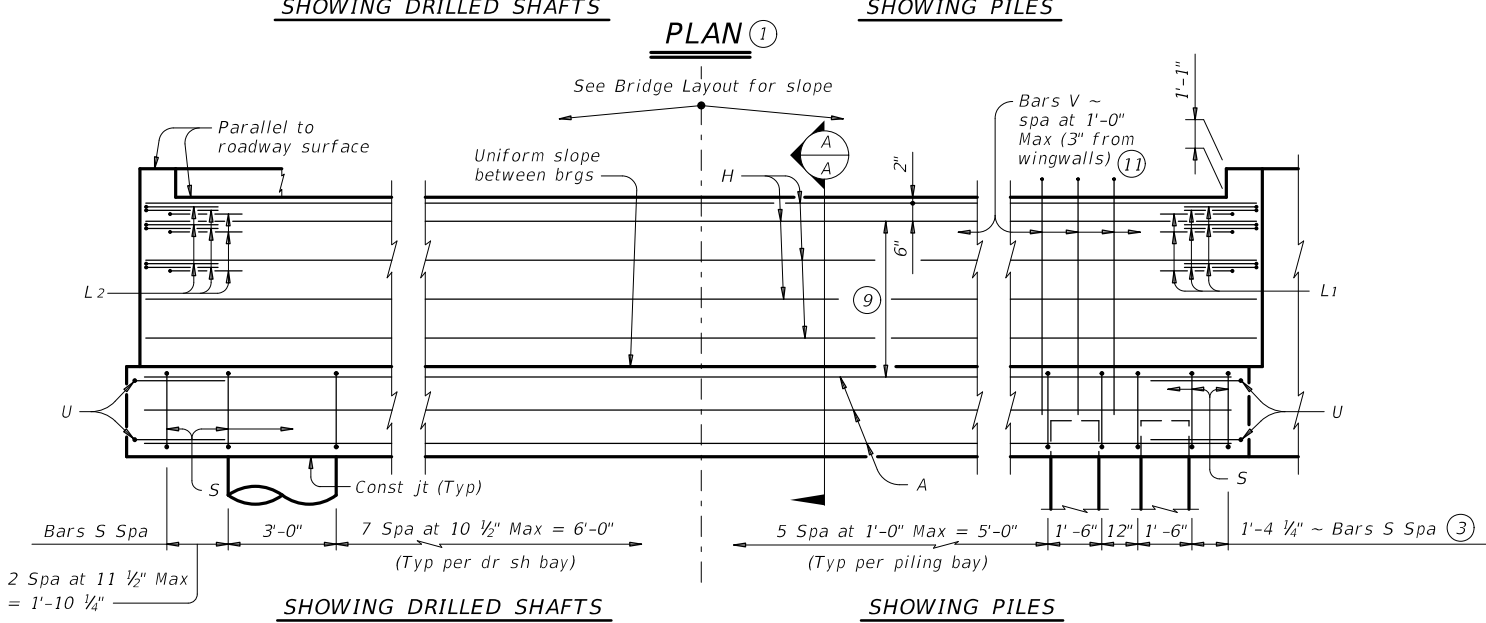


TABLE A											
Header Slope	Girder Type	Wingwall Type	Wingwall Lgth "WL"	"W1" ⑫	"Z1"	"W2"	"Z2"				
2:1	Tx28	Cantilevered	8.000'	Not Applicable							
	Tx34	Cantilevered	9.000'								
	Tx40	Cantilevered	10.000'								
	Tx46	Cantilevered	11.000'								
	Tx54	Founded	13.000'	0.541'	9.418'	5.588'	9.418'				
3:1	Tx28	Cantilevered	12.000'	Not Applicable							
	Tx34	Founded	14.000'					0.347'	10.142'	5.782'	10.142'
	Tx40	Founded	15.000'					0.153'	10.867'	5.976'	10.867'
	Tx46	Founded	17.000'					-0.235'	12.316'	6.365'	12.316'
	Tx54	Founded	19.000'					-0.623'	13.764'	6.753'	13.764'

HL93 LOADING SHEET 1 OF 3

Texas Department of Transportation Bridge Division Standard

ABUTMENTS
 TYPE TX28 THRU TX54
 PRESTR CONC I-GIRDERS
 32' ROADWAY 15° SKEW

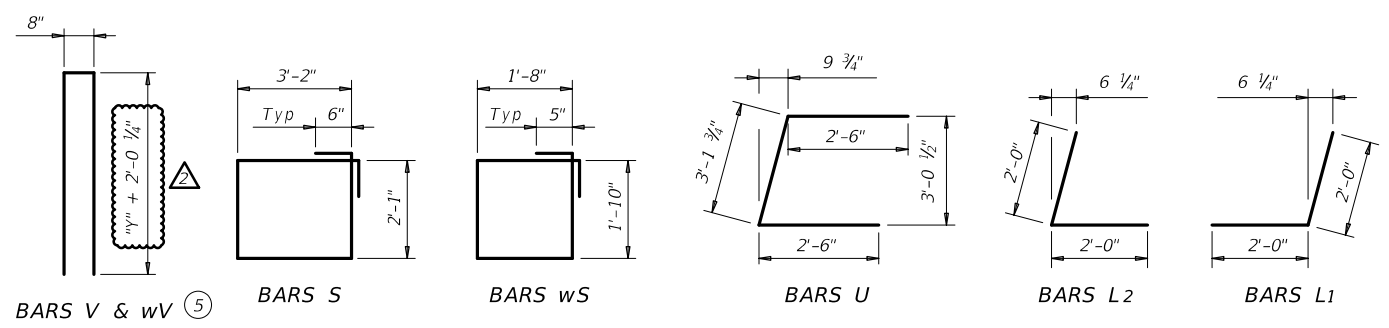
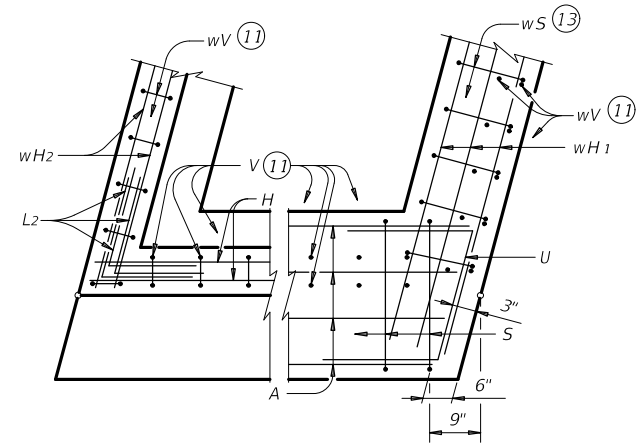
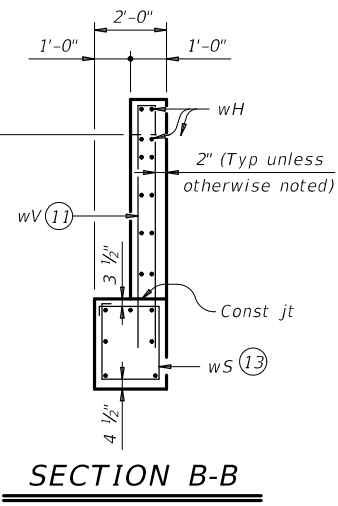
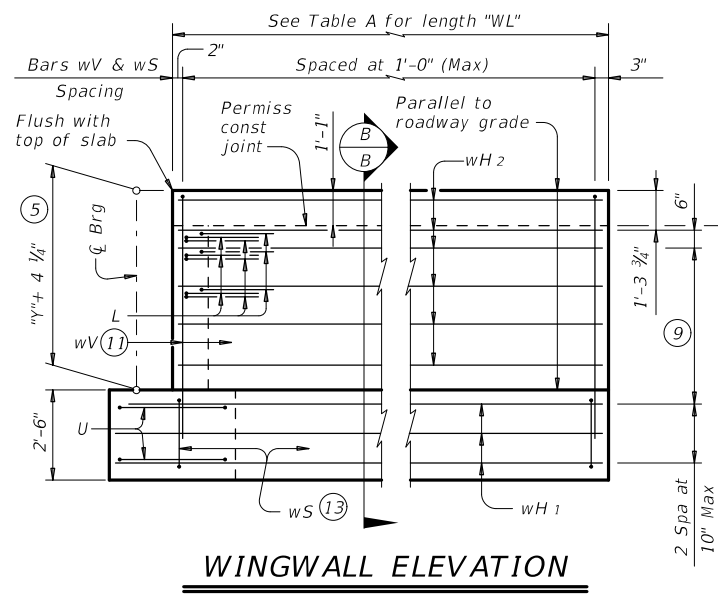
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 COT xDOT
 REVISIONS
 0233 05 038 SH 54
 DIST COUNTY SHEET NO.
 ELP CULBERSON 106

REVISED, 10/26/2022

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- ⑤ See Span details for "y" value.
- ⑨ Spacing based on girder type:
 Tx28 ~ 3 spaces at 1'-0" Max
 Tx34 ~ 3 spaces at 1'-0" Max
 Tx40 ~ 4 spaces at 1'-0" Max
 Tx46 ~ 4 spaces at 1'-0" Max
 Tx54 ~ 5 spaces at 1'-0" Max
- ⑪ Field bend as needed to clear piles.
- ⑬ Adjust as required to avoid piling.

HL93 LOADING SHEET 2 OF 3

		Bridge Division Standard	
ABUTMENTS TYPE TX28 THRU TX54 PRESTR CONC I-GIRDERS 32' ROADWAY 15° SKEW			
AIG-32-15			
FILE: aig42sts-17.dgn	DN: TAR	CK: KCM	DW: JTR
① TxDOT	CONT: 0233	SECT: 05	JOB: 038
REVISIONS	DIST: ELP	COUNTY: CULBERSON	SHEET NO: 107

REVISED, 10/26/2022

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TABLES OF ESTIMATED QUANTITIES WITH 2:1 HEADER SLOPE (14)

TYPE Tx28 Girders					TYPE Tx34 Girders					TYPE Tx40 Girders					TYPE Tx46 Girders					TYPE Tx54 Girders									
Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight					
A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820					
D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11					
H	8	#6	34'-10"	419	H	8	#6	34'-10"	419	H	10	#6	34'-10"	523	H	10	#6	34'-10"	523	H	12	#6	34'-10"	628					
L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54					
L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54					
S	30	#5	11'-6"	360	S	30	#5	11'-6"	360	S	30	#5	11'-6"	360	S	30	#5	11'-6"	360	S	30	#5	11'-6"	360					
U	4	#6	8'-2"	49	U	4	#6	8'-2"	49	U	4	#6	8'-2"	49	U	4	#6	8'-2"	49	U	4	#6	8'-2"	49					
V	34	#5	11'-4"	402	V	34	#5	12'-4"	437	V	34	#5	13'-4"	473	V	34	#5	14'-4"	508	V	34	#5	15'-8"	556					
wH1	14	#6	9'-5"	198	wH1	14	#6	10'-5"	219	wH1	14	#6	11'-5"	240	wH1	14	#6	12'-5"	261	wH1	14	#6	14'-5"	303					
wH2	20	#6	7'-8"	230	wH2	20	#6	8'-8"	260	wH2	24	#6	9'-8"	348	wH2	24	#6	10'-8"	385	wH2	28	#6	12'-8"	533					
wS	18	#4	7'-10"	94	wS	20	#4	7'-10"	105	wS	22	#4	7'-10"	115	wS	24	#4	7'-10"	126	wS	28	#4	7'-10"	147					
wV	18	#5	11'-4"	213	wV	20	#5	12'-4"	257	wV	22	#5	13'-4"	306	wV	24	#5	14'-4"	359	wV	28	#5	15'-8"	458					
Reinforcing Steel				Lb	3,904	Reinforcing Steel				Lb	4,045	Reinforcing Steel				Lb	4,353	Reinforcing Steel				Lb	4,510	Reinforcing Steel				Lb	4,973
Class "C" Concrete				CY	19.0	Class "C" Concrete				CY	20.6	Class "C" Concrete				CY	22.3	Class "C" Concrete				CY	24.0	Class "C" Concrete				CY	27.0

TABLES OF ESTIMATED QUANTITIES WITH 3:1 HEADER SLOPE (14)

TYPE Tx28 Girders					TYPE Tx34 Girders					TYPE Tx40 Girders					TYPE Tx46 Girders					TYPE Tx54 Girders									
Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight	Bar	No.	Size	Length	Weight					
A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820	A	10	#11	34'-3"	1,820					
D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11	D(7)	2	#9	1'-8"	11					
H	8	#6	34'-10"	419	H	8	#6	34'-10"	419	H	10	#6	34'-10"	523	H	10	#6	34'-10"	523	H	12	#6	34'-10"	628					
L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54	L1	9	#6	4'-0"	54					
L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54	L2	9	#6	4'-0"	54					
S	30	#5	11'-6"	360	S	30	#5	11'-6"	360	S	30	#5	11'-6"	360	S	30	#5	11'-6"	360	S	30	#5	11'-6"	360					
U	4	#6	8'-2"	49	U	4	#6	8'-2"	49	U	4	#6	8'-2"	49	U	4	#6	8'-2"	49	U	4	#6	8'-2"	49					
V	34	#5	11'-4"	402	V	34	#5	12'-4"	437	V	34	#5	13'-4"	473	V	34	#5	14'-4"	508	V	34	#5	15'-8"	556					
wH1	14	#6	13'-5"	282	wH1	14	#6	15'-5"	324	wH1	14	#6	16'-5"	345	wH1	14	#6	18'-5"	387	wH1	14	#6	20'-5"	429					
wH2	20	#6	11'-8"	350	wH2	20	#6	13'-8"	411	wH2	24	#6	14'-8"	529	wH2	24	#6	16'-8"	601	wH2	28	#6	18'-8"	785					
wS	26	#4	7'-10"	136	wS	30	#4	7'-10"	157	wS	32	#4	7'-10"	167	wS	36	#4	7'-10"	188	wS	40	#4	7'-10"	209					
wV	26	#5	11'-4"	307	wV	30	#5	12'-4"	386	wV	32	#5	13'-4"	445	wV	36	#5	14'-4"	538	wV	40	#5	15'-8"	654					
Reinforcing Steel				Lb	4,244	Reinforcing Steel				Lb	4,482	Reinforcing Steel				Lb	4,830	Reinforcing Steel				Lb	5,093	Reinforcing Steel				Lb	5,609
Class "C" Concrete				CY	21.6	Class "C" Concrete				CY	24.0	Class "C" Concrete				CY	25.9	Class "C" Concrete				CY	28.5	Class "C" Concrete				CY	31.8

(7) Omit Dowels D at end of multi-span unit. Adjust reinforcing steel total accordingly.

(14) Quantities shown are for one abutment only (with approach slab). With no approach slab, add 1.3 CY Class "C" concrete and 209 lbs reinforcing steel for 4 additional Bars H.



ABUTMENTS
 TYPE TX28 THRU TX54
 PRESTR CONC I-GIRDERS
 32' ROADWAY 15° SKEW

REVISION AIG-32-15

FILE: aig42sts-17.dgn	DN: TAR	CK: KCM	DW: JTR	CK: TAR
CONTRACT: 0233	SECTION: 05	JOB: 038	HIGHWAY: SH 54	
DIST: ELP	COUNTY: CULBERSON	SHEET NO: 108		

REVISED, 10/26/2022