FED ROAD DIV. NO.	MAINTENANCE PROJECT NO.		SHEET NO.
6	RMC 6388-14-001		1
STATE	STATE DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE LOOP 375 (PURPLE HEART MEMORIAL HWY)
EL PASO COUNTY
RMC: 6388-14-001

NET LENGTH OF PROJECT: 22,984.99 FT = 4.353 MILES

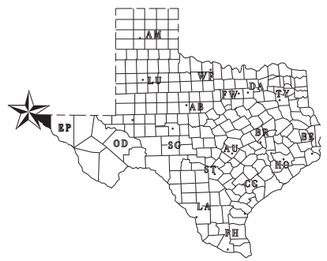
LIMITS FROM: SPUR 601
TO: MONTANA AVENUE (US62/180)

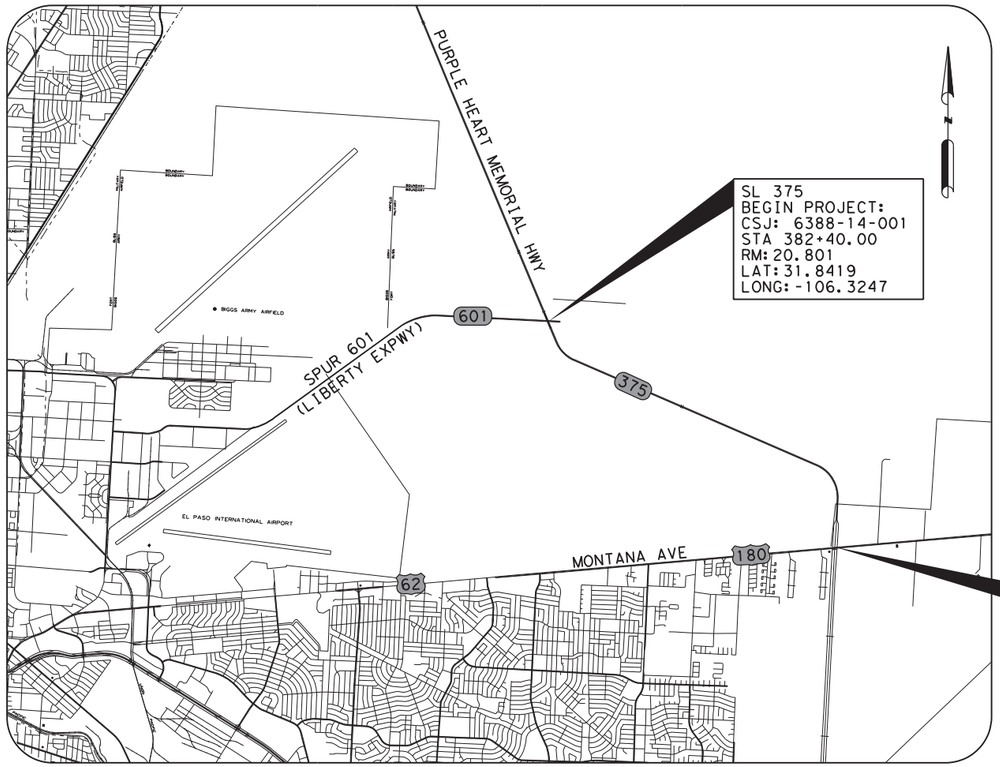
FOR REMOVAL AND PROPOSED CHAIN LINK FENCE

INDEX OF SHEETS

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
9/9/2021

THE STANDARD SHEETS SPECIFICALLY INDENTIFIEDWITH A SIGN(*)HAVE BEEN SELECTED BY ME,OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT





EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS ACCEPTED: _____

CONTRACTOR: _____

TOTAL CONTRACTOR COST: _____

FINAL AS BUILT

THE CONSTRUCTION WAS PERFORMED UNDER MY SUPERVISION IN ACCORDANCE WITH THE PLANS AND CONTRACT.

_____
AREA ENGINEER

_____
DATE

STATE OF TEXAS
JOSE L. REYES
91964
LICENSED PROFESSIONAL ENGINEER
9/9/2021

SUBMITTED FOR LETTING: _____

JOSE L. REYES P.E. 91964
CONSULTANT ENGINEER
DANNENBAUM ENGINEERING

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED 9/10/2021
DocuSigned by:
CEE6816D3535405... ENGINEER / OFFICE MANAGER

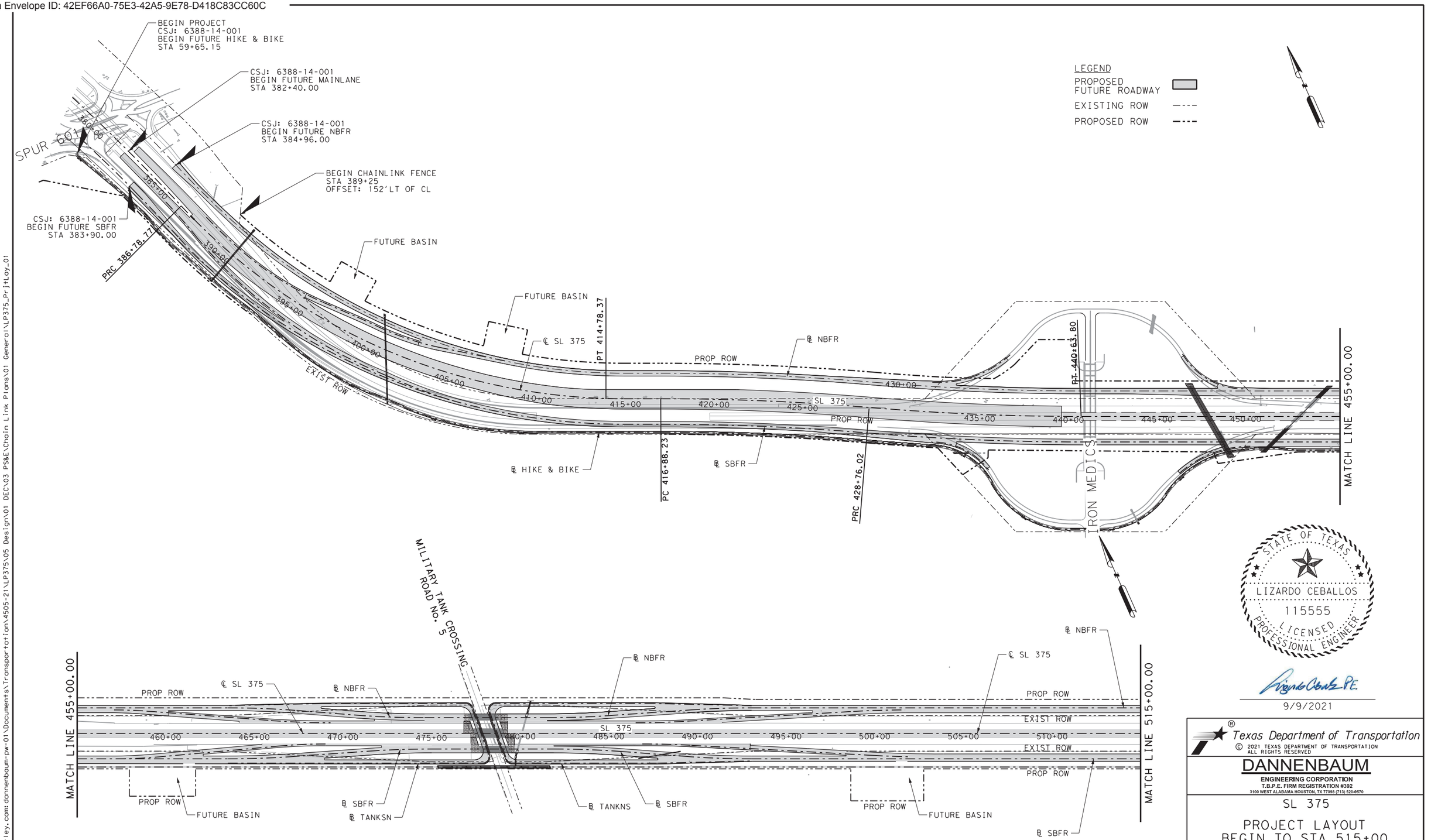
RECOMMENDED 9/10/2021
DocuSigned by:
Omar Madrid, P.E.
2D8D99B8F780488...

APPROVED 9/10/2021
DocuSigned by:
7A68C5EA0D94496...

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND THE SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-9570



STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-8570

SL 375

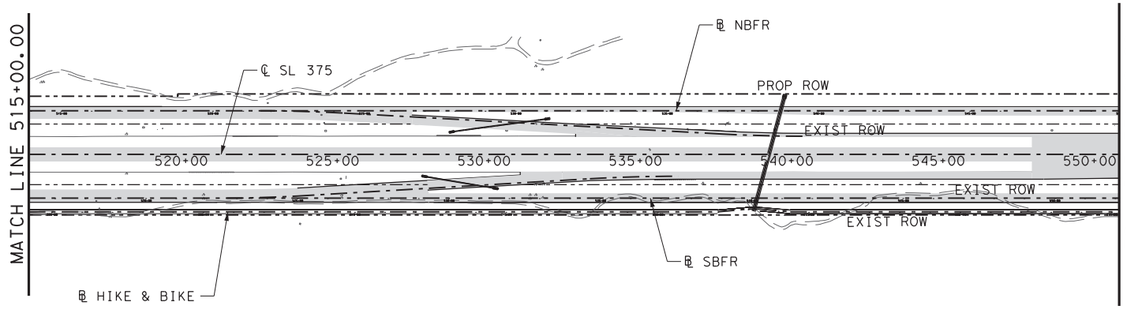
PROJECT LAYOUT
BEGIN TO STA 515+00

SCALE: 1" = 500'

SHEET 1 OF 2

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.	SHEET
6	RMC 6388-14-001	2

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

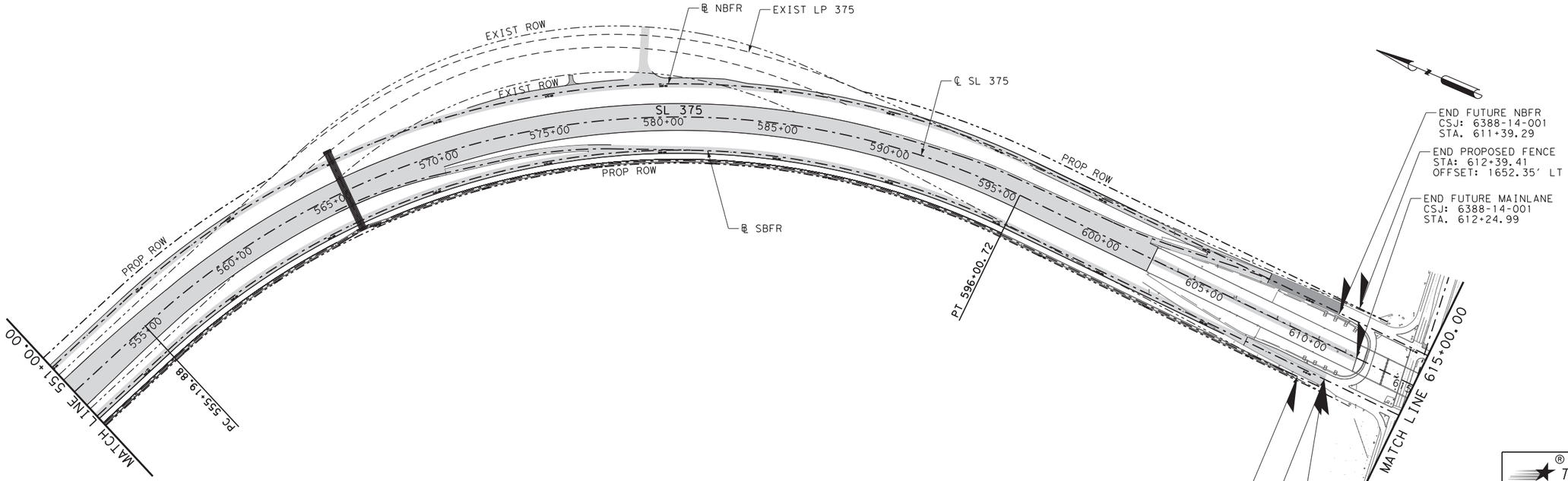


LEGEND

PROPOSED FUTURE ROADWAY

EXISTING ROW

PROPOSED ROW



END FUTURE NBFR
CSJ: 6388-14-001
STA. 611+39.29

END PROPOSED FENCE
STA: 612+39.41
OFFSET: 1652.35' LT

END FUTURE MAINLANE
CSJ: 6388-14-001
STA. 612+24.99

Lizardo Ceballos P.E.

9/9/2021

Texas Department of Transportation

DANNENBAUM

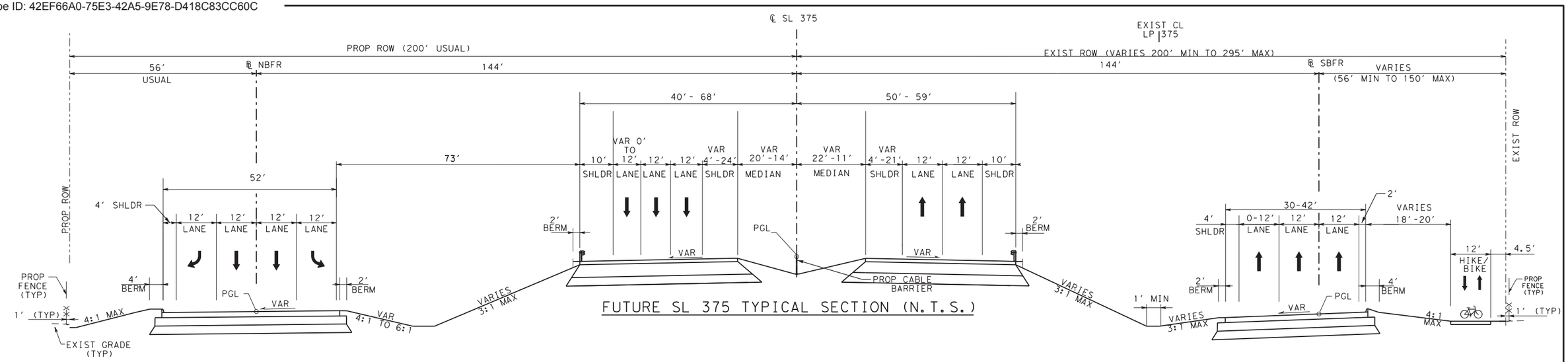
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

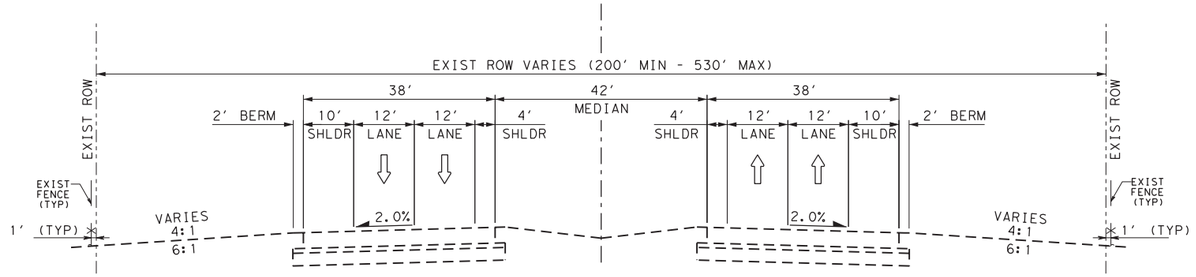
PROJECT LAYOUT
STA 515+00 TO END

SCALE: 1" = 500' SHEET 2 OF 2

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		3
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375



FUTURE SL 375 TYPICAL SECTION (N.T.S.)



EXISTING LOOP 375 TYPICAL SECTION

LEGEND

EXIST DIRECTION OF TRAFFIC

PROP DIRECTION OF TRAFFIC

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-9570

SL 375

PROPOSED
TYPICAL SECTIONS

SCALE: 1" = 30' SHEET 1 OF 1

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		4
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

Control: 6388-14-001

County: EL PASO

Highway: SL 375

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

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.

Become familiar with project site prior to submitting bids.

Contractor shall submit all permits and applications required by Ft. Bliss and obtain approval prior to commencing work.

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.

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 traffic control plan standard sheets and the sequence of work. Changes will not be permitted, except as approved in writing by the Engineer.

Seventy-two (72) hours before starting excavation, the contractor shall call texas811 at 800-344-8377 to have the location of existing underground utilities marked in the field.

View plans on-line or download from the web at:
http://www.txdot.gov/business/plansonline/plansonline.html

Order plans from any of the plan reproduction companies on the web at:
http://www.txdot.gov/business/letting-bids/repro-companies.html

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

Franciso Marez Francisco.marez@txdot.gov
Monica Debrule Monica.Dubrule@txdot.gov (RMCs)

Contractor questions will only be accepted through email to the above individual(s).

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:
ftp://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/El%20Paso%20District/

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.

Request a proposal electronically from the Department's website:
http://www.txdot.gov/business-cq/pr.htm

Or use the electronic bidding site: http://www.txdot.gov/business/letting-bids/ebs.html.

A bid summation will be available on-line at: http://www.txdot.gov/business/bt.html .

Item 4 – Scope of Work

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

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

Maintain all Contract items until final acceptance of the project.

Plan datum for this project is NAD 83 for horizontal and NAVD 88 for elevation based.

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.

Contractor shall obtain R.P.L.S. to layout the proposed right of way in accordance with the LP 375 Right of Way Map to be provided by TxDOT.

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

Item 7 – Legal Relations and Responsibilities

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

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

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

Occupational Safety & Health Administration (OSHA) regulations prohibit operations that bring people or equipment within 10 ft. of an energized electrical line. Where workers and/or equipment may be close to an

energized electrical line, notify the electrical power company and make all necessary adjustments to ensure the safety of workers near the energized line.

No significant traffic generator events identified.

Item 8 – Prosecution and Progress

Working days will be calculated in accordance with Section 8.3.1.4., “Standard Work week.”
A bar chart schedule is required for this project conforming to Section 8.5.5.1., “Bar Chart.” Provide updates as directed by the Engineer.

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

Contractor shall submit all permits and applications required by Ft. Bliss and obtain approval prior to commencing work.

Prior to commencing with placement of proposed fence, contractor shall obtain a Dig Permit from Ff Bliss Public Works.

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

Existing pavement, utilities, structures, etc. damaged as a result 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.

Item 9 – Measurement and Payment

Submit Material on Hand (MOH) payment requests at least **three (3)** working days before the end of the month for payment consideration on that month’s estimate.

Item 100 – Preparing Right of Way

Refer to Specification for a list of items covered under this Item. All existing metal beam guard fence, guardrail end treatments, terminal anchor sections, and concrete riprap called out in the plans to be removed will be paid under this Item.

This Item shall cover all items requiring removal as directed by the Engineer not governed otherwise by individual removal pay items elsewhere in the plans.

Item 150 – Blading

Contractor shall blade a path within the proposed right of way at locations where new chain link fence is to be placed in accordance to plans.

Contractor to grade path to remove steep sand domes or sand hills along right of way level to general grade of existing terrain.

Path to be bladed shall be of sufficient width for placement of new chain link fence. Area graded shall not block, disrupt or change existing drainage patterns.

Item 502 – Barricades, Signs, and Traffic Handling

Once a month, the Contractor’s responsible person for traffic control plan (TCP) compliance will accompany Department personnel on at least one daytime inspection and one nighttime inspection of the traffic control devices used on the project.

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

Additional signs and barricades, placed as directed, will 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 1 for Department approved Training.

Control: 6388-14-001

County: EL PASO

Highway: SL 375

Table 1
Contractor Responsible Person and Alternate

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

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

Table 2

Other Work Zone Personnel

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

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

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

If Law Enforcement Personnel is required by the Engineer, coordinate with local law enforcement as directed or agreed. Complete the weekly tracking form provided by the Department and submit invoices with 5% allowance for Law Enforcement payments by Contractor that agree with the tracking form for payment at the end of each month where approved services were provided.

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

Any approved change to the sequence of work or TCP, must be signed and sealed by a Contractor's Licensed Professional Engineer assuming full responsibility for any additional barricade signs and devices needed.

Maintain shoulders and median areas in a condition capable of serving as emergency paths, as approved. This work will be subsidiary to this Item.

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

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

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

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

Fill any holes left by barricade or sign supports and restore the area to its original condition.
Use Type A flashing warning lights or delineators to mark open excavation, footings, foundations, or other obstructions near lanes that may be open to traffic, as directed.

For additional information pertaining to channelization, signing, spacing details, and flagging procedures required to regulate, warn, and guide traffic through project, refer to the "Barricade and Construction Standards," BC(1)-21 and to the current *Texas Manual on Uniform Traffic Control Devices(TMUTCD).*

Remove or cover signs that do not apply to current conditions at the end of each day's work.
Repair and/or replace all signs damaged by the public or due to weather events.

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

Item 506 – Temporary Erosion, Sedimentation, and Environmental Controls

Place Best Method Practices (BMP's) in locations as designated in the plans or as directed to meet field conditions.
Place a weatherproof bulletin board containing the Texas Commission on Environmental Quality (TCEQ) required information on the project at a site as directed. Post the following documents:
1. TCEQ "TPDES Storm Water Program" Construction Site Notice; Primary Construction Site Notices from both Contractor and Department, completed and signed.
2. TCEQ "Primary Notice of Intents," from both Contractor and Department; and
3. TCEQ "TPDES Permit."

Place rain gauge(s) at locations as designated.
The total disturbed area for this project is 10.06 acres. Establish the authorization requirements for Storm Water Discharges for soil disturbed area in this project, all project locations in the Contract, and Contractor Project Specific Locations (PSLs), within one mile of the project limits. Both the Department and the Contractor shall obtain an authorization to discharge storm water from TCEQ for the construction activities shown on the plans. Obtain required authorization from the TCEQ for any Contractor PSLs for construction support activities on or off right of way. When the total area disturbed for all projects in the Contract and PSLs within one mile of the project limits exceeds five acres, provide a copy of the Contractor Notice of Intent (NOI) PSLs on the right of way to the Engineer (to the appropriate Municipal Separate Storm Sewer System (MS4) Operator when on an Off-system State route).
Best Method Practices (BMP's) may be adjusted to meet field conditions, or as directed. Engineer will verify all locations prior to placement of BMPs. Within the project limits, keep all inlets functional as long as possible to accept storm water as part of the Storm Water Pollution Prevention Plan (SWP3), as directed.
The sedimentation fences will be paid at the time of their initial placement. Any required replacement will be paid by Force Account.
Grading operations will be limited to the catch point of the proposed cross-section.
Preserve any vegetation outside these limits.

Item 550 – Chain Link Fence

The proposed chain link fence shall comply with Unified Facilities Criteria 4-022-03 Security Engineering : Fences Gates and Guard Facilities.

Proposed Chain link fence shall be 7 ft in height with an additional 1ft barbed wire as shown on UFC detail sheets in plans.

Existing chain link fence cannot be removed until proposed chain link fence is in place and Government property is secure.

Item 6001 – Portable Changeable Message Sign

Provide messages as directed.

Portable Changeable Message Sign to be available as deemed necessary.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6388-14-001 **DISTRICT** El Paso **COUNTY** El Paso
HIGHWAY SL0375

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**6388-14-001**			
		PROJECT ID		**A00181087**			
		COUNTY		**El Paso**			
		HIGHWAY		**SL0375**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	230.000		230.000	
	150-6002	BLADING	HR	40.000		40.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	6.000		6.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	468.000		468.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	468.000		468.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	18,400.000		18,400.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	18,400.000		18,400.000	
	550-6003	CHAIN LINK FENCE (REMOVE)	LF	36,461.000		36,461.000	
	550-6006	GATE (REMOVE)	EA	4.000		4.000	
	550-6008	CHAIN LINK FENCE (INSTALL) (8')	LF	36,532.000		36,532.000	
	550-6012	CHAIN LINK FENCE GATE (INSTALL)(6'X16')	EA	4.000		4.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	

STATION TO STATION	100 6002 PREPARING ROW STA	150 6002 BLADING * HR	502 6001 BARRICADES, SIGN AND TRAFFIC HANDLING MO	506 6020 CONSTRUCTION EXITS (INSTALL) (TY 1) * SY	506 6024 CONSTRUCTION EXITS (REMOVE) * SY	506 6038 TEMPT SEDMT CONT FENCE (INSTALL) SF	506 6039 TEMP SEDMT CONT FENCE (REMOVE) LF	550 6003 CHAIN LINK FENCE (REMOVE) LF	550 6006 GATE (REMOVE) * EA	550 6008 CHAIN LINK FENCE (INSTALL) (8') * LF	550 6012 CHAIN LINK FENCE GATE (INSTALL) (6'X 16') * EA	6001 6002 PORTABLE CHANGEABLE MESSAGE SIGN * EA
CHAIN LINK PLAN LAYOUT SHEETS												
BEGIN TO 383+00	1					0	0	192		0		
383+00 TO 394+00	11			156	156	981	981	1507		1397		
394+00 TO 405+00	11					0	0	1120		1036		
405+00 TO 416+00	11					0	0	1113		1035		
416+00 TO 427+00	11					994	994	2096		2105		
427+00 TO 438+00	11					548	548	1080		1203		
438+00 TO 449+00	11					0	0	0		0		
449+00 TO 460+00	11			156	156	788	788	1315		1825		
460+00 TO 471+00	11					1100	1100	2202		2200		
471+00 TO 482+00	11					1137	1137	2072		2252		
482+00 TO 493+00	11					1100	1100	2202		2200		
493+00 TO 504+00	11					1100	1100	2200		2200		
504+00 TO 515+00	11					1100	1100	2200		2200		
515+00 TO 526+00	11					1100	1100	2200		2200		
526+00 TO 537+00	11					1100	1100	2200		2200		
537+00 TO 548+00	11					1100	1100	2200		2200		
548+00 TO 559+00	11					1078	1078	2202		2200		
559+00 TO 570+00	11					1036	1036	1587		1485		
570+00 TO 581+00	11					1036	1036	1169		1036		
581+00 TO 592+00	11					1036	1036	1471		1429		
592+00 TO 603+00	11					1076	1076	2202		2200		
603+00 TO END	9			156	156	990	990	1931		1929		
PROJECT TOTAL	230	40	6	468	468	18400	18400	36461	4	36532	4	2

* THESE ITEMS TO BE USED AS DIRECTED BY THE ENGINEER

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

SUMMARY
OF
ROADWAY AND SW3P

SHEET 1 OF 1

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		7
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

SEQUENCE OF WORK:

PHASE 1A
1) LAYOUT PROPOSED RIGHT OF WAY
2) LOCATE EXISTING UTILITIES
3) BLADE PATH FOR PROPOSED FENCE NORTH OF LP 375 FROM SPUR 601 TO IRON MEDICS INTERCHANGE.
4) PLACE NEW FENCE NORTH OF LP 375 FROM SPUR 601 TO IRON MEDICS INTERCHANGE
5) FINISH GRADING ALONG BLADED PATH

PHASE 1B
1) BLADE PATH FOR PROPOSED FENCE NORTH OF LP 375 FROM IRON MEDICS TO TANK TRAIL No.5.
2) PLACE NEW FENCE NORTH OF LP 375 FROM IRON MEDICS TO TANK TRAIL No.5.
3) FINISH GRADING ALONG BLADED PATH

PHASE 1C
1) BLADE PATH FOR PROPOSED FENCE NORTH OF LP 375 FROM TANK TRAIL No.5 TO MONTANA.
2) PLACE NEW FENCE NORTH OF LP 375 FROM IRON MEDICS TO TANK TRAIL No.5. MONTANA
3) FINISH GRADING ALONG BLADED PATH
4) REMOVE EXISTING FENCE NORTH OF LP 375

PHASE 2A
1) BLADE PATH FOR PROPOSED FENCE SOUTH OF LP 375 FROM SPUR 601 TO IRON MEDICS INTERCHANGE.
2) PLACE NEW FENCE SOUTH OF LP 375 FROM SPUR 601 TO IRON MEDICS INTERCHANGE
3) FINISH GRADING ALONG BLADED PATH

PHASE 2B
1) BLADE PATH FOR PROPOSED FENCE SOUTH OF LP 375 FROM IRON MEDICS TO TANK TRAIL No.5.
2) PLACE NEW FENCE SOUTH OF LP 375 FROM IRON MEDICS TO TANK TRAIL No.5.
3) FINISH GRADING ALONG BLADED PATH

PHASE 2C
1) BLADE PATH FOR PROPOSED FENCE SOUTH OF LP 375 FROM TANK TRAIL No.5 TO MONTANA.
2) PLACE NEW FENCE SOUTH OF LP 375 FROM IRON MEDICS TO TANK TRAIL No.5. MONTANA
3) FINISH GRADING ALONG BLADED PATH
4) REMOVE ALL FENCE FROM SOUTH SIDE OF LP 375

Lizardo Ceballos P.E.

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

SEQUENCE OF WORK
NARRATIVE

SHEET 1 OF 1

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		8
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

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

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

WORKER SAFETY NOTES:

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

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

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

Texas Department of Transportation

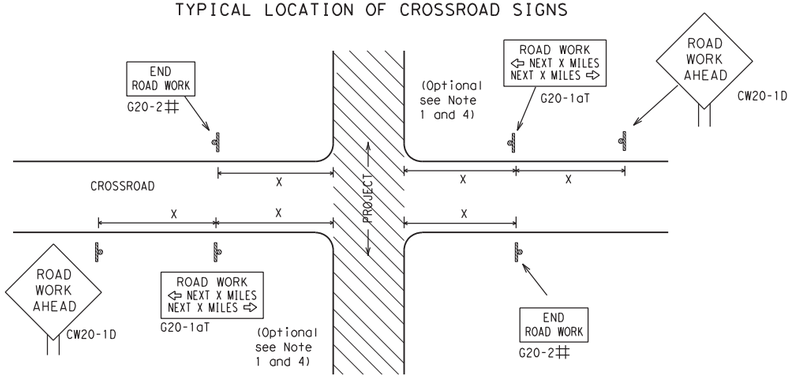
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	6388	14	001	SL 375
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	ELP	EL PASO		9

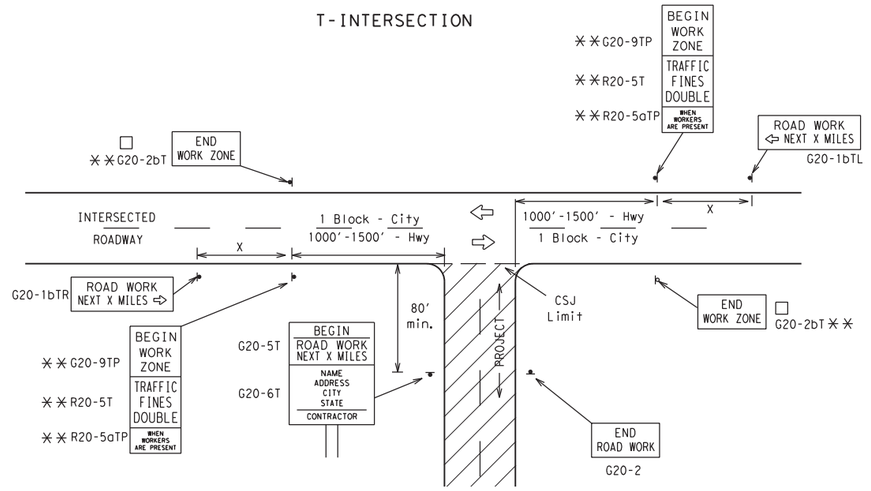
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

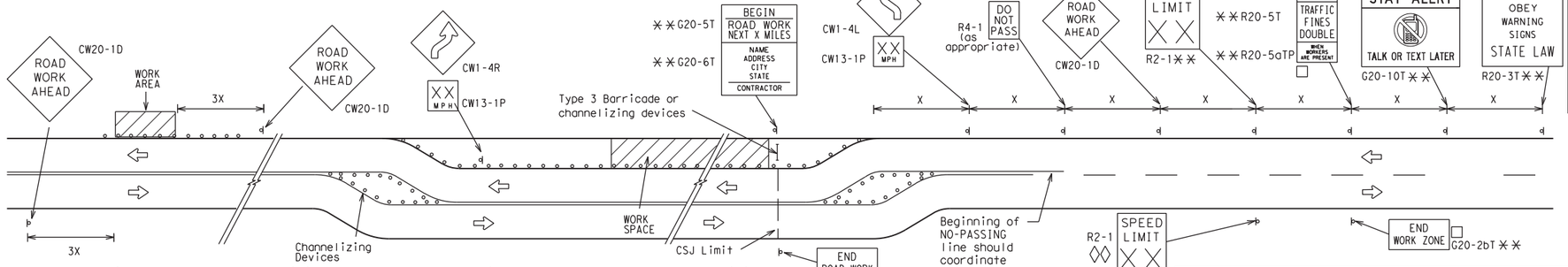
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

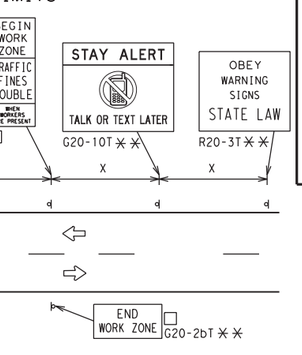
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

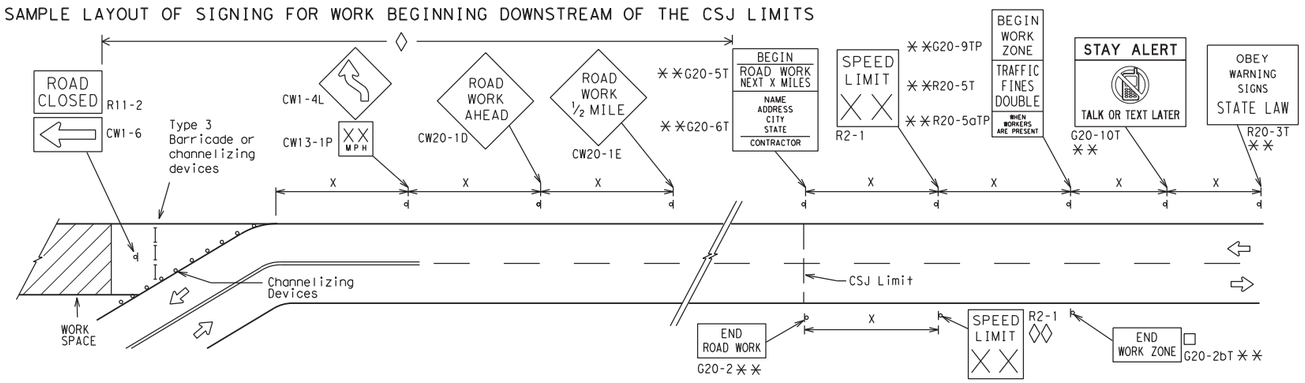


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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



NOTES

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

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

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

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

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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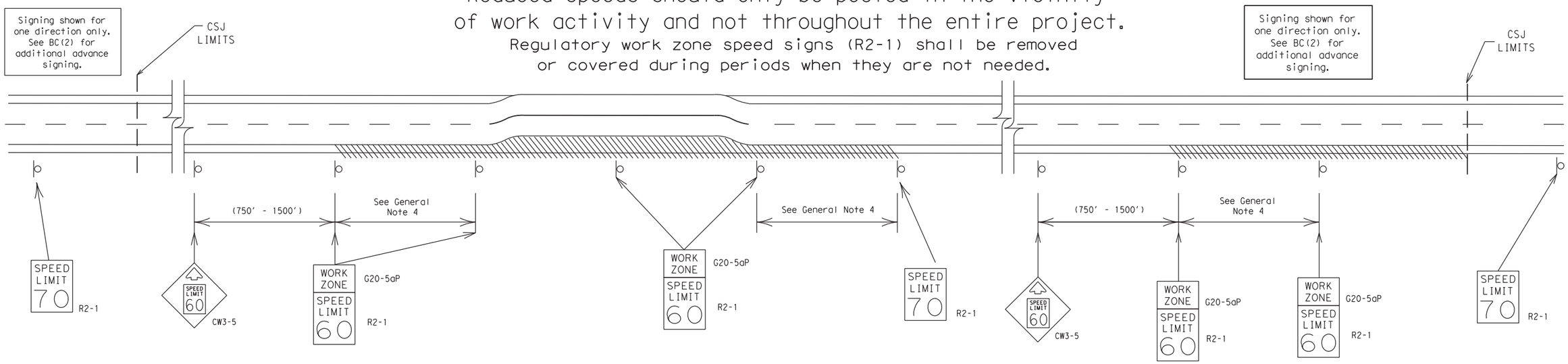
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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DATE:
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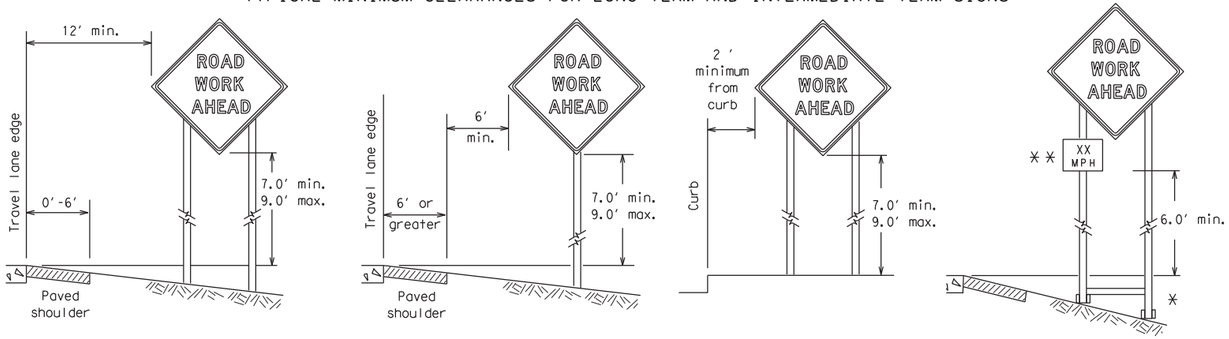
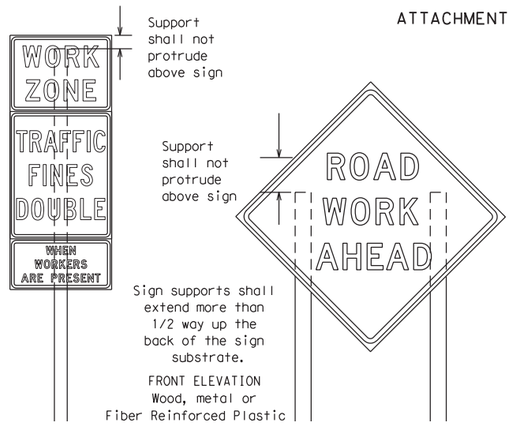
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

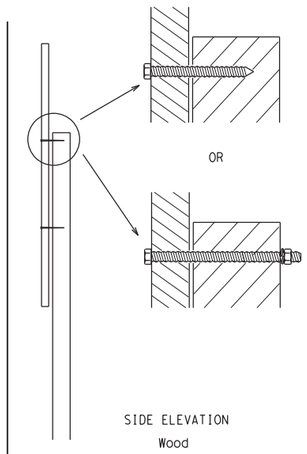


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





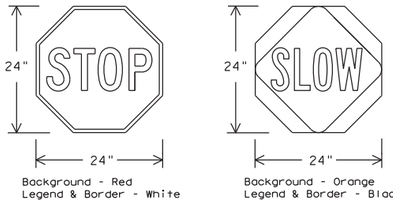
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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DATE:
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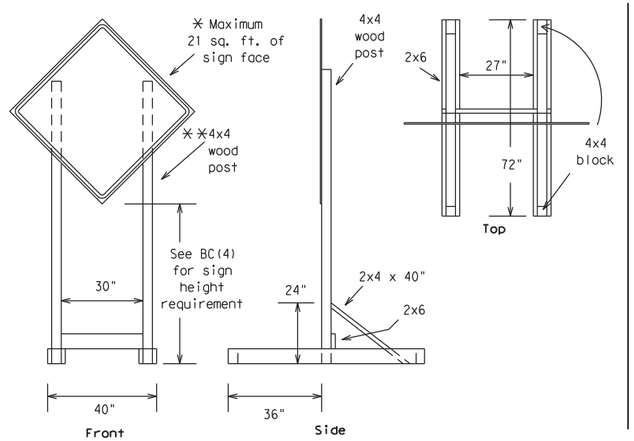
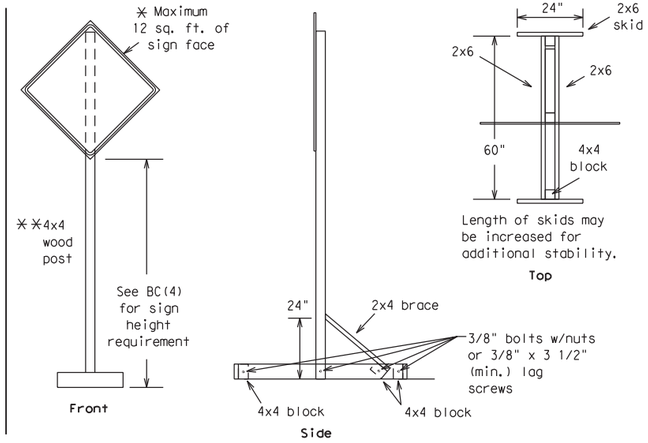
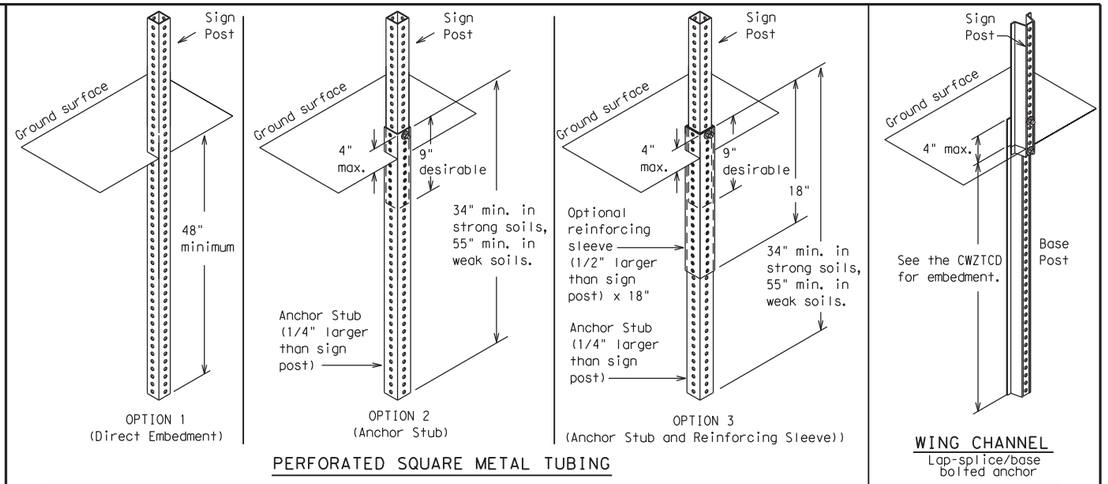




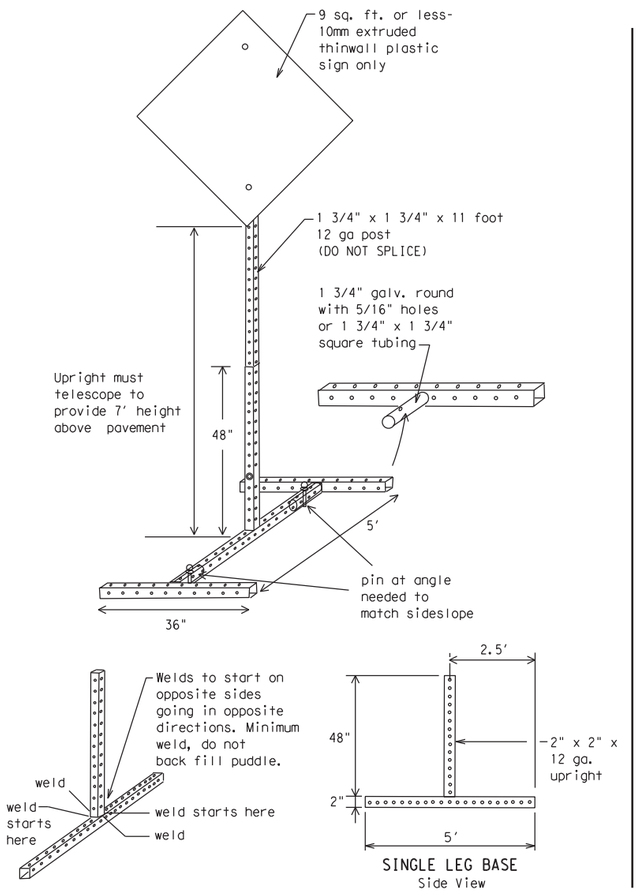
SKID MOUNTED WOOD SIGN SUPPORTS

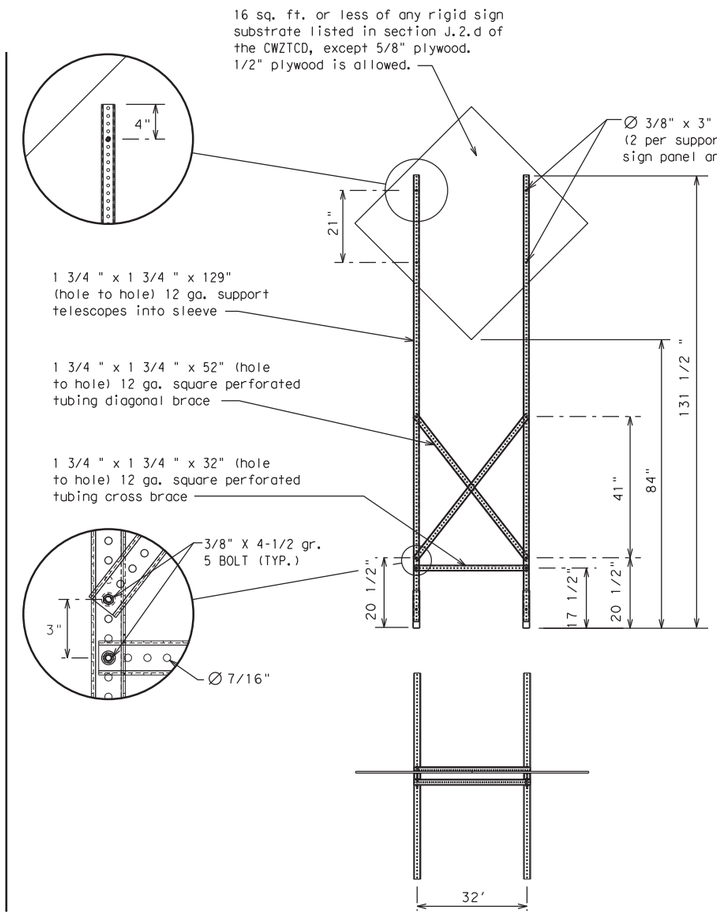
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

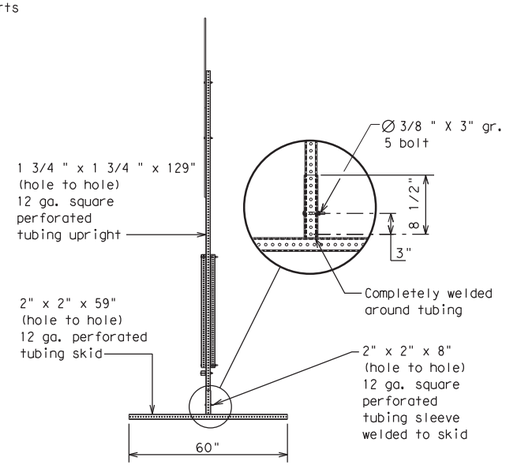


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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FILE:

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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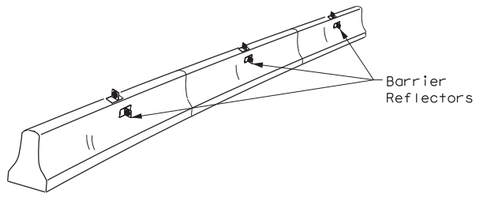
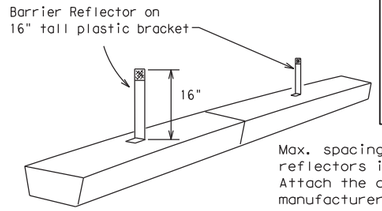
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

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

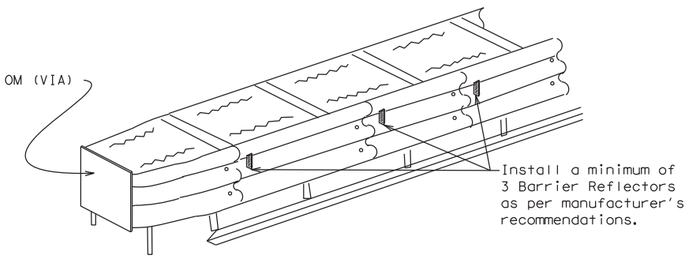


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.



DELINEATION OF END TREATMENTS

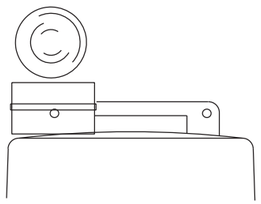
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

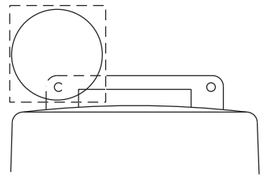
1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this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



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



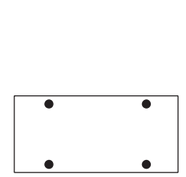
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

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

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

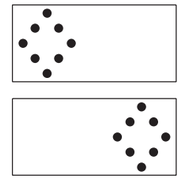
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

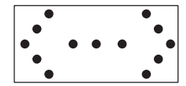


4 CORNER CAUTION

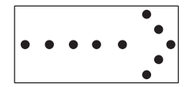
OR



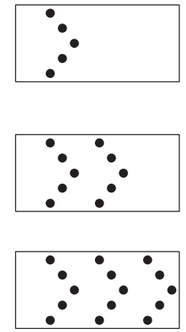
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



RIGHT/LEFT ARROW
(right arrow shown; left is similar)



RIGHT/LEFT SEQUENTIAL CHEVRON
(right chevron shown; left is similar)

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6388	14	001	SL 375
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DATE:
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

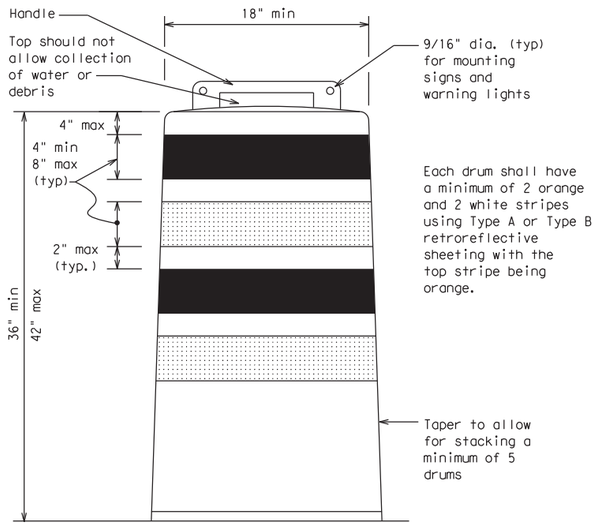
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

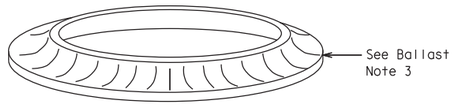
RETROREFLECTIVE SHEETING

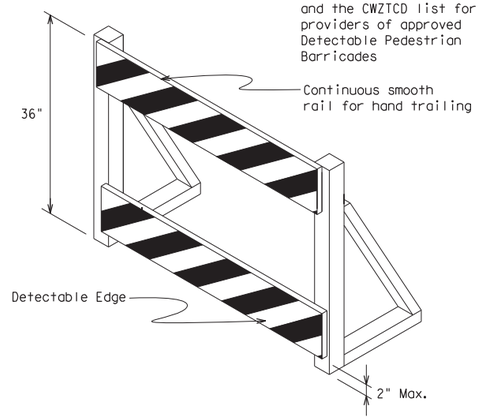
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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



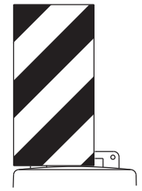




DETECTABLE PEDESTRIAN BARRICADES

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

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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

.

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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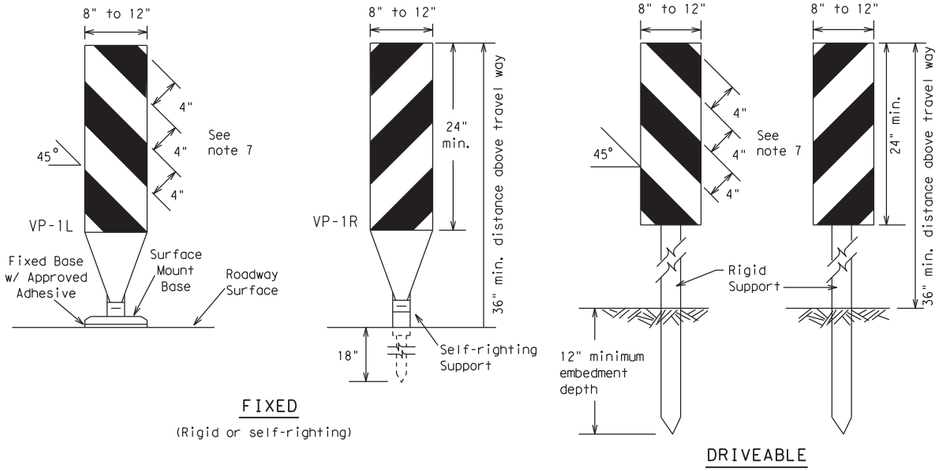
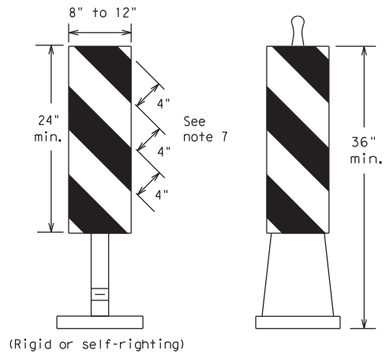


FIXED
(Rigid or self-righting)

DRIVEABLE

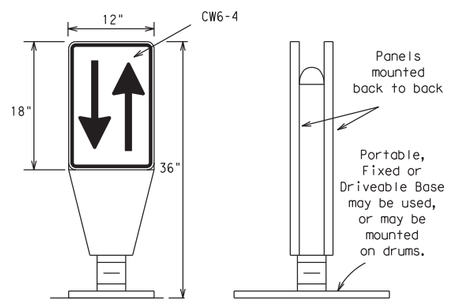


(Rigid or self-righting)

PORTABLE

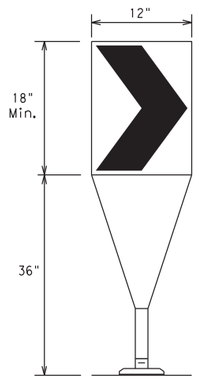
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



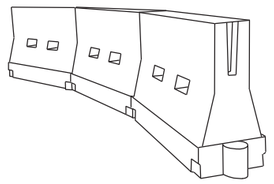
Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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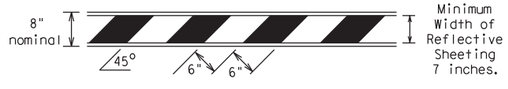
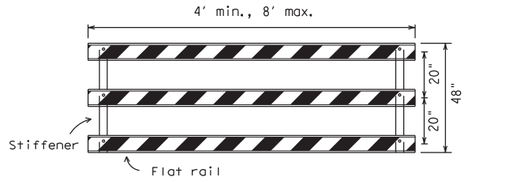
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



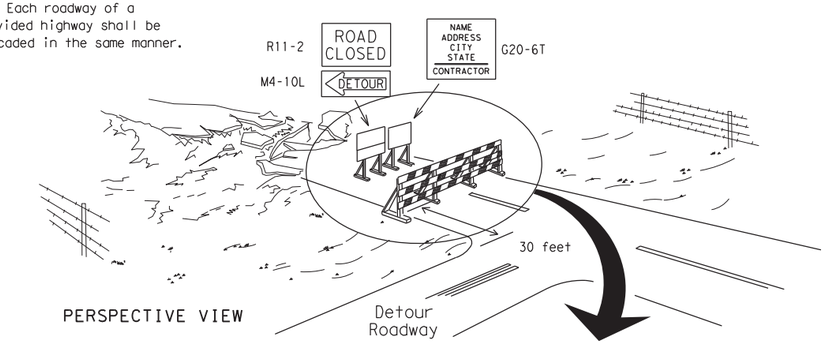
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

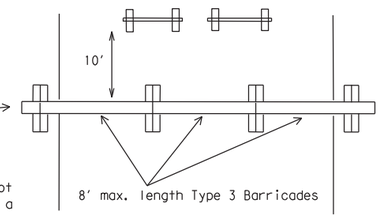
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

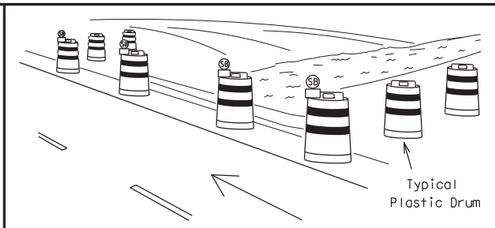
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

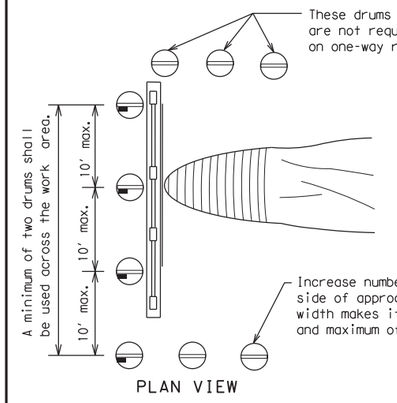
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

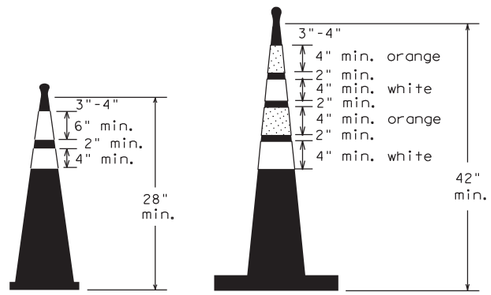
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



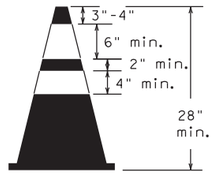
PLAN VIEW

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

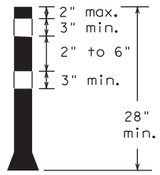
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

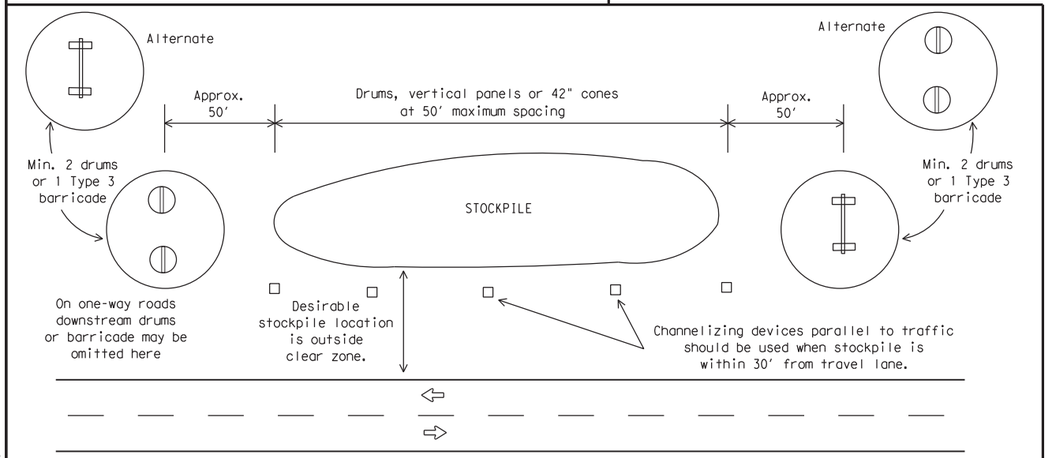


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

DATE:
FILE:

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	6388	14	001	SL 375
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	EL PASO		18

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

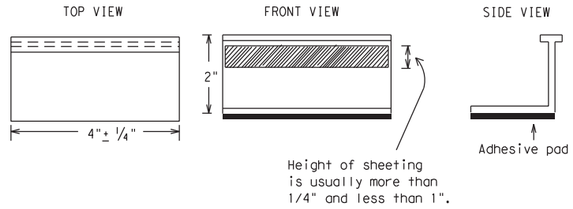
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

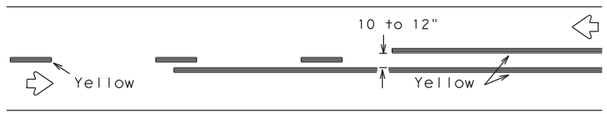
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6388	14	001	SL 375
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	ELP	EL PASO		19
11-02 8-14				

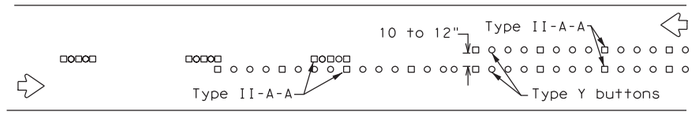
105

DATE:
FILE:

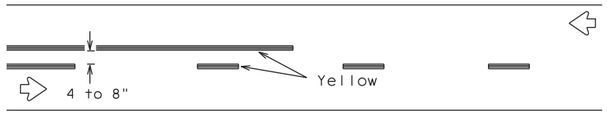
PAVEMENT MARKING PATTERNS



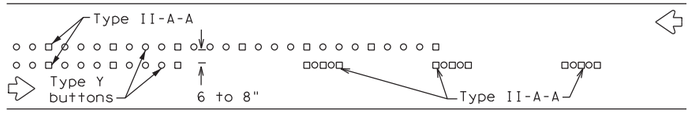
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



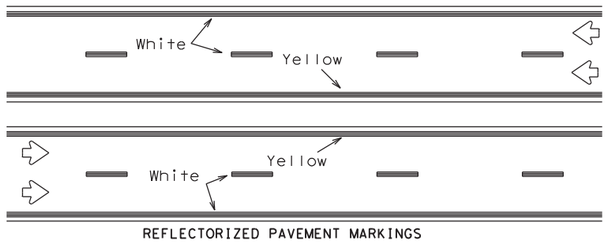
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



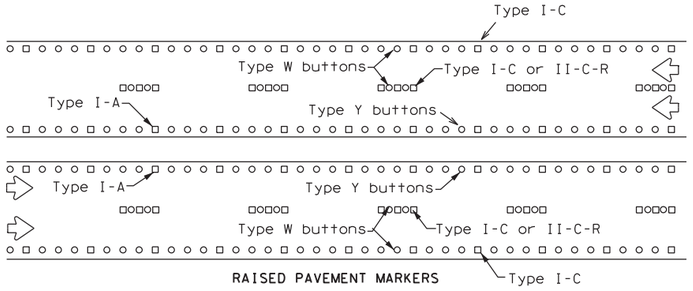
RAISED PAVEMENT MARKERS - PATTERN B

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

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



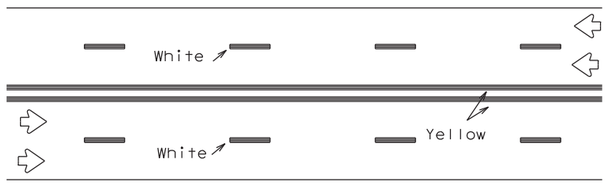
REFLECTORIZED PAVEMENT MARKINGS



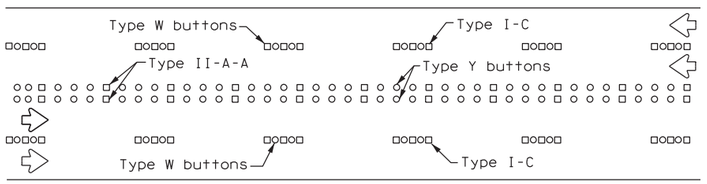
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



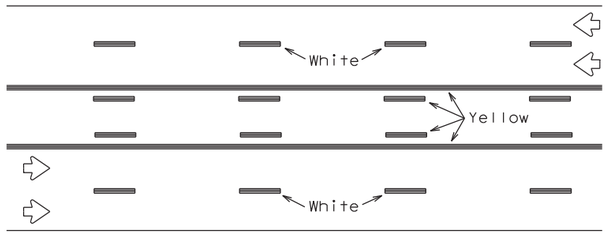
REFLECTORIZED PAVEMENT MARKINGS



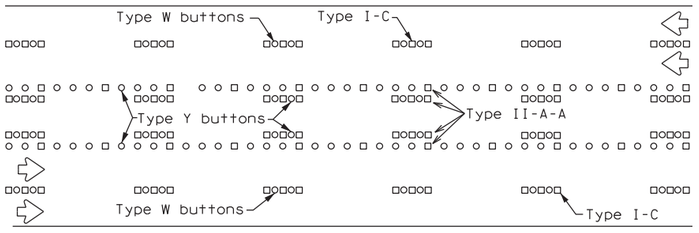
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

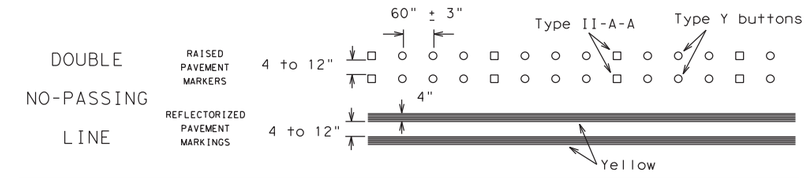
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

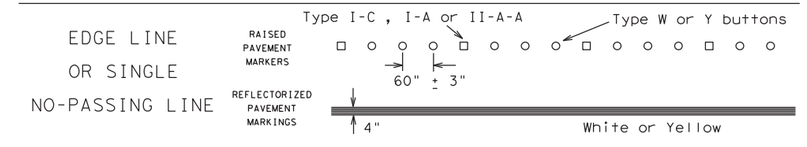
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

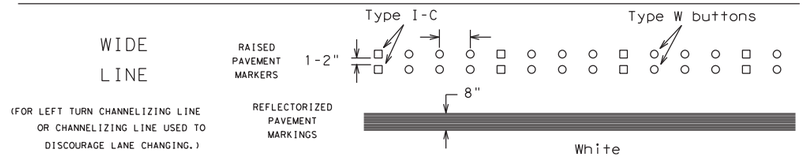


EDGE LINE OR SINGLE NO-PASSING LINE



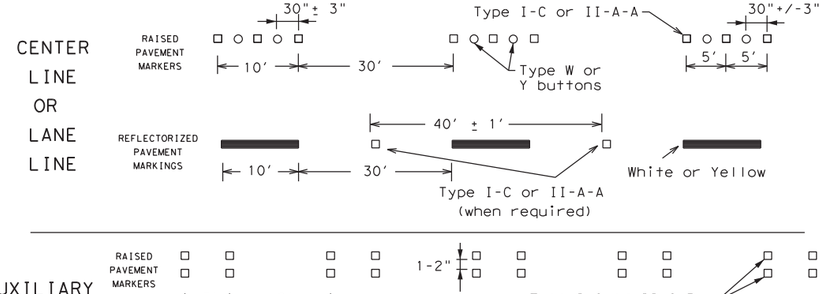
WIDE LINE

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

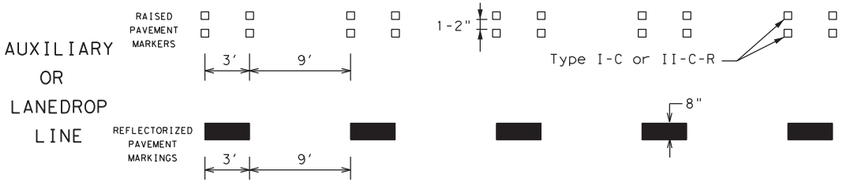


BROKEN LINES

CENTER LINE OR LANE LINE

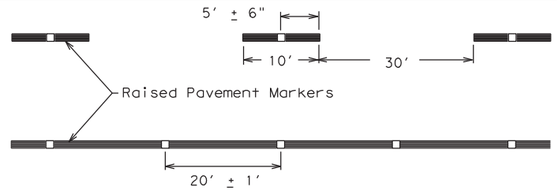


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

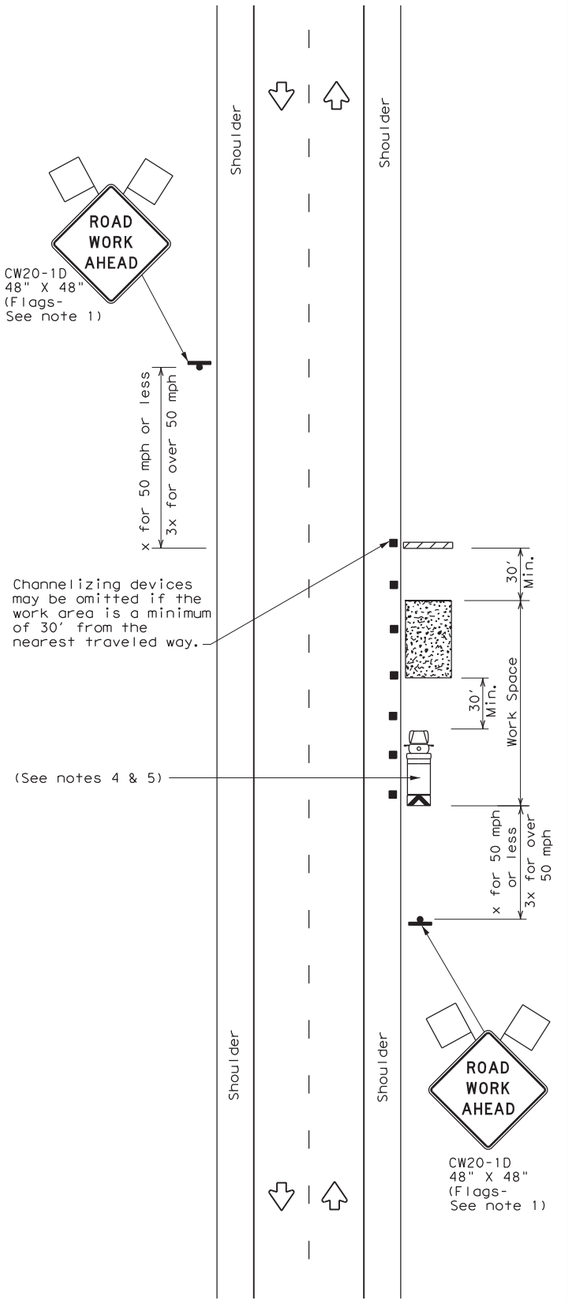
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

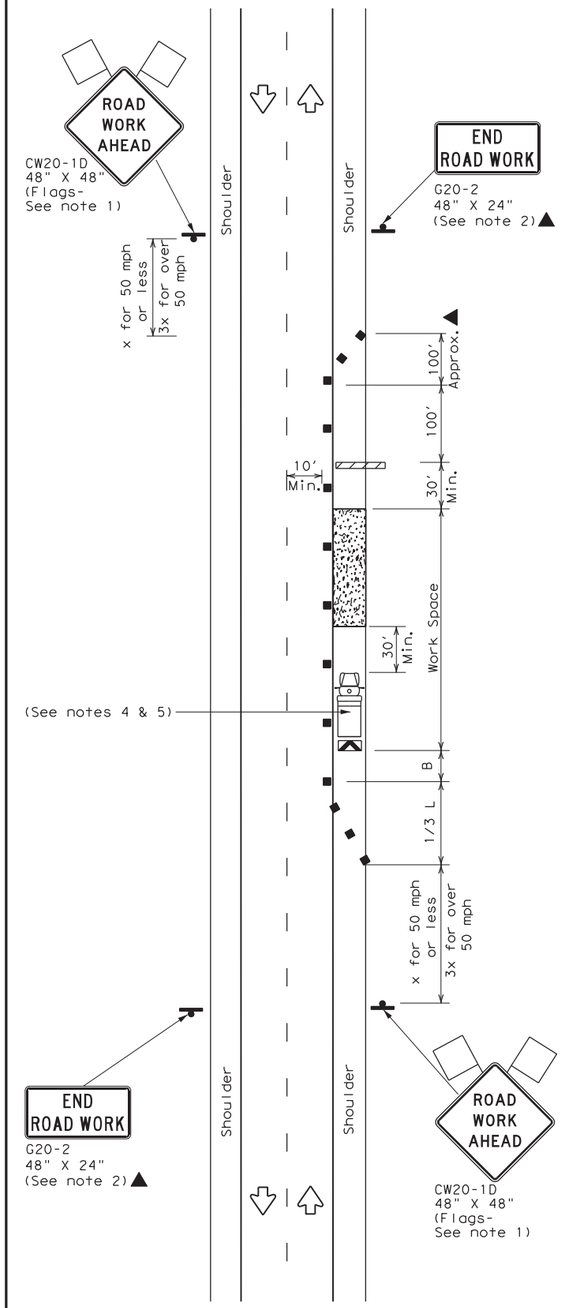
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	6388	14	001	SL 375
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		20

DATE:
FILE:



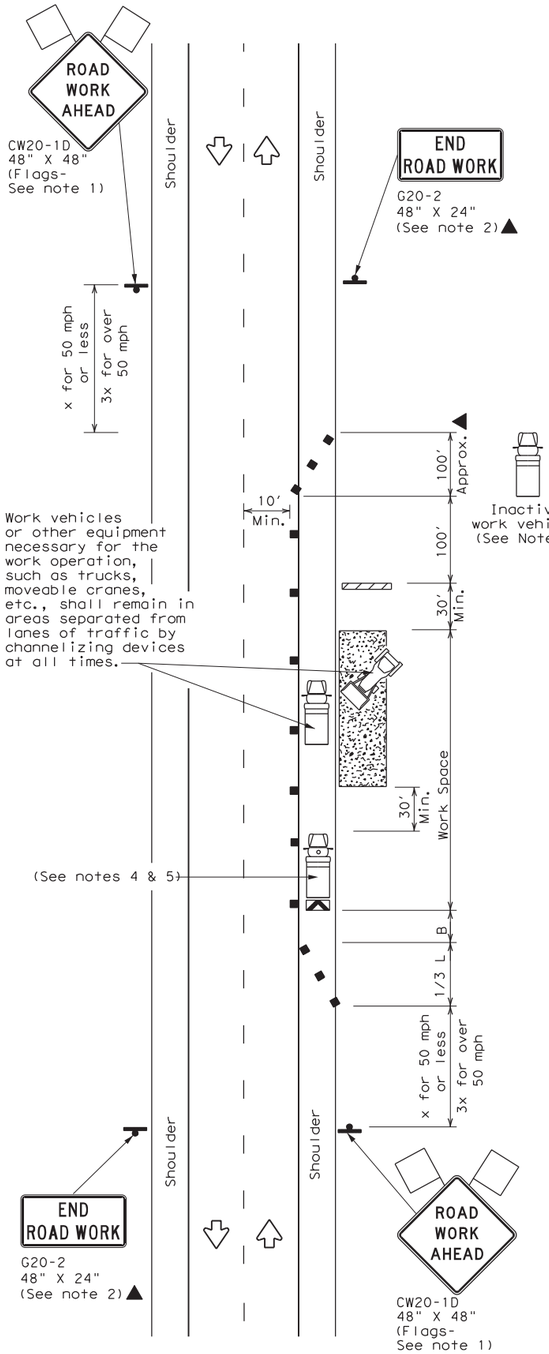
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

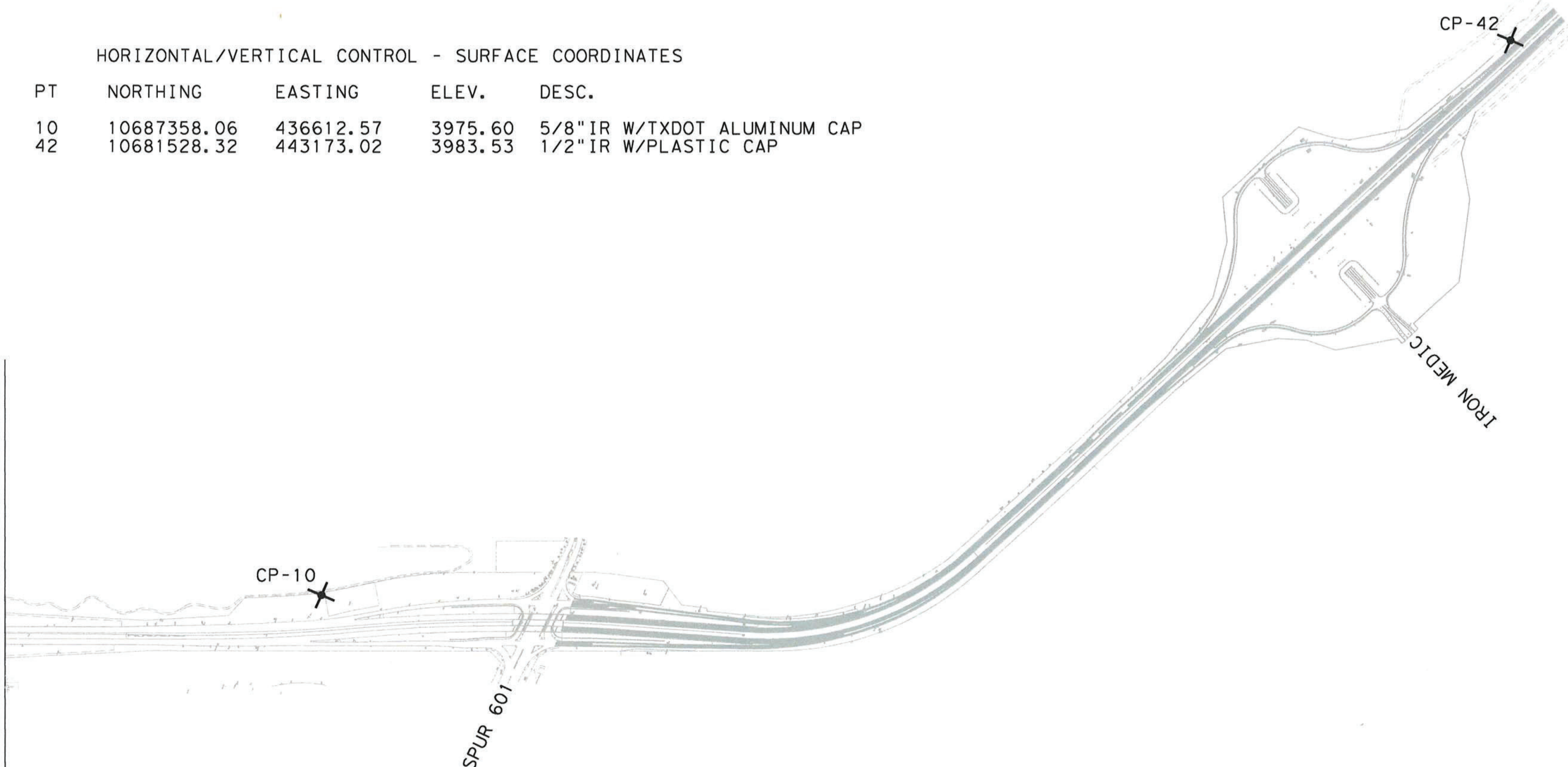
TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6388	14	001	SL 375
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	ELP	EL PASO		21
1-97 2-18				

SURVEY CONTROL SHEET

HORIZONTAL/VERTICAL CONTROL - SURFACE COORDINATES

PT	NORTHING	EASTING	ELEV.	DESC.
10	10687358.06	436612.57	3975.60	5/8"IR W/TXDOT ALUMINUM CAP
42	10681528.32	443173.02	3983.53	1/2"IR W/PLASTIC CAP



MATCH LINE SHEET 5 OF 6

NOTES:

1. ALL PROJECT COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 HARN(93)/NAVD 88. ALL COORDINATES SHOWN HEREON ARE ADJUSTED TO SURFACE BY MULTIPLYING BY A COMBINED ADJUSTMENT FACTOR OF 1.00023100.
UNITS: U.S. SURVEY FEET.

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

2/6/19

LOOP 375
FROM SPUR 601
TO 0.5 MILES WEST
OF LOOP 375 (JOE BATTLE)
AT DYER STREET
EL PASO COUNTY, TEXAS
JOB No.: 33122B
CSJ# 2552-02-029
CONTRACT NO. 34-234P1002
WA# 02
DATE: JULY 2013
FIELDBOOK No.: 10060, 10084

400 0 200 400 800
GRAPHIC SCALE
1" = 400' (22" x 34")
1" = 800' (11" x 17")
EL PASO COUNTY, TEXAS

Survey Date: JUNE, 2013

SAM INC. SURVEYING-AERIAL MAPPING-ENGINEERING
4801 Southwest Parkway
Parkway Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029

Texas Department of Transportation

HORIZONTAL AND VERTICAL CONTROL SHEET

Sheet 6 of 6

FHWA TEXAS DIVISION	PROJECT NO.	SHEET NO.
		22

STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.

SURVEY CONTROL INDEX SHEET

MONTANA AVE. STATIC
TECH: JLB
DATE: 10/10/2012
JOB#: 31059B
HORIZONTAL DATUM: DERIVED FROM NAD-83
NGS: CE0135, CE0141
VERTICAL DATUM: DERIVED FROM NAVD-88. PT: 5, 21
COORDINATE SYSTEM: TEXAS STATE PLANE NAD83 (HARN 93)/NAVD88
ZONE: TEXAS CENTRAL
UNITS: U.S. SURVEY FEET

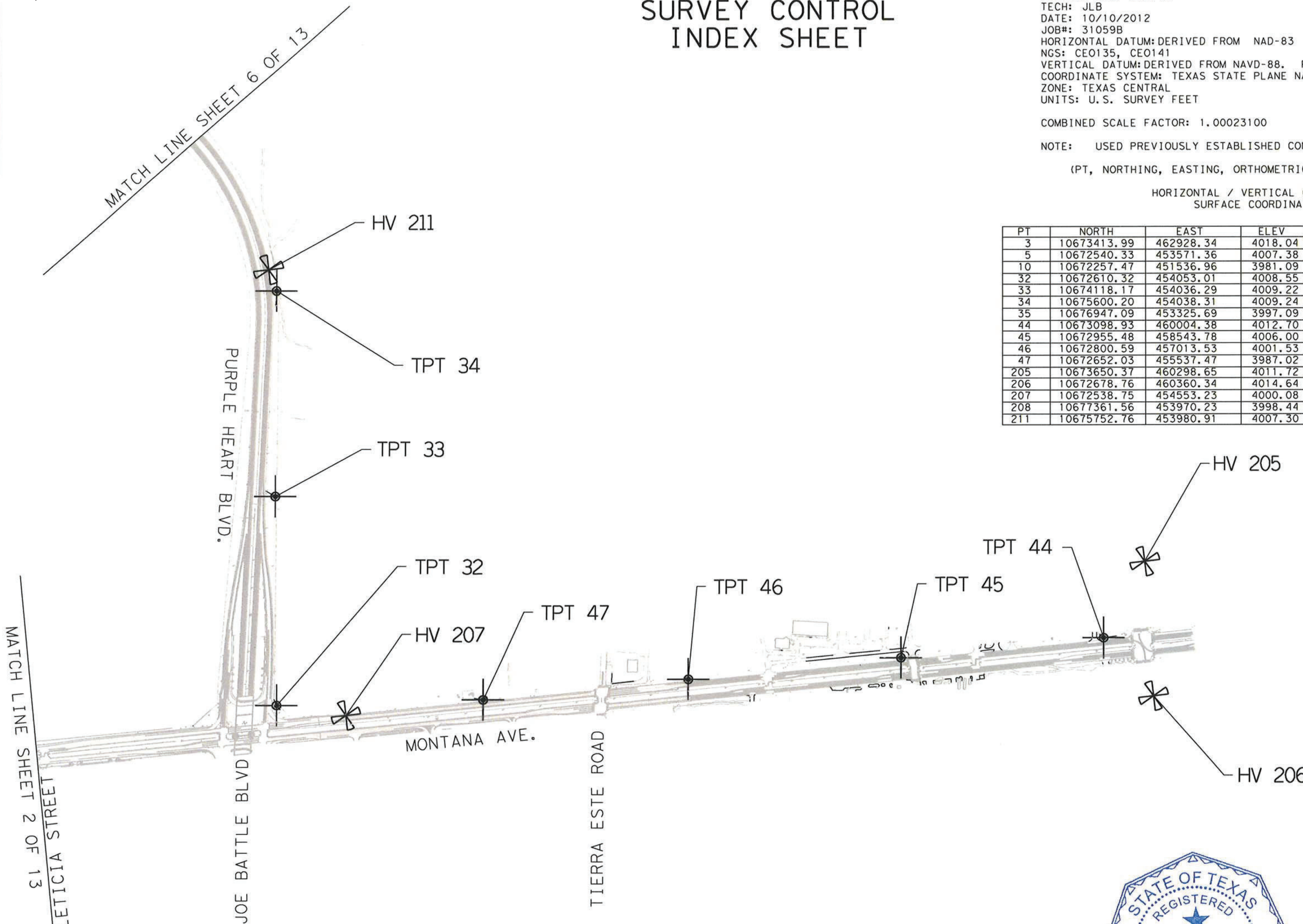
COMBINED SCALE FACTOR: 1.00023100

NOTE: USED PREVIOUSLY ESTABLISHED CONTROL (CSJ No. 0374-02-045)

(PT, NORTHING, EASTING, ORTHOMETRIC ELEVATION, DESCRIPTOR)

HORIZONTAL / VERTICAL CONTROL
SURFACE COORDINATES

PT	NORTH	EAST	ELEV	DESCRIPTION
3	10673413.99	462928.34	4018.04	GPS - CE0150
5	10672540.33	453571.36	4007.38	GPS - SAM03
10	10672257.47	451536.96	3981.09	5/8"IRS W/ALUMINUM CAP
32	10672610.32	454053.01	4008.55	5/8"IRS W/ALUMINUM CAP
33	10674118.17	454036.29	4009.22	1/2"IRS W/PLASTIC CAP
34	10675600.20	454038.31	4009.24	1/2"IRS W/PLASTIC CAP
35	10676947.09	453325.69	3997.09	1/2"IRS W/PLASTIC CAP
44	10673098.93	460004.38	4012.70	1/2"IRS W/PLASTIC CAP
45	10672955.48	458543.78	4006.00	1/2"IRS W/PLASTIC CAP
46	10672800.59	457013.53	4001.53	1/2"IRS W/PLASTIC CAP
47	10672652.03	455537.47	3987.02	1/2"IRS W/PLASTIC CAP
205	10673650.37	460298.65	4011.72	MAG W/SHINER
206	10672678.76	460360.34	4014.64	MAG W/SHINER
207	10672538.75	454553.23	4000.08	MAG W/SHINER
208	10677361.56	453970.23	3998.44	1/2"IRS W/PLASTIC CAP
211	10675752.76	453980.91	4007.30	MAG W/SHINER



N

LAYOUT SCALE
(IN FEET)
400 0 400 800
1" = 800' (11"x17")
1" = 400' (22"x34")

NOTES:

1. ALL PROJECT COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 HARN(93)/NAVD 88. ALL COORDINATES SHOWN HEREON ARE ADJUSTED TO SURFACE BY MULTIPLYING BY A COMBINED ADJUSTMENT FACTOR OF 1.00023100.
UNITS: U.S. SURVEY FEET.

2. PROJECT CONTROL VALUES WERE ESTABLISHED BY CONSTRAINING TO NGS MONUMENTS CE0135 AND CE0141 FROM TXDOT EL PASO CSJ # 0374-02-045.

MONTANA AVENUE - US 62 / 180
FROM 0.5 MILES WEST
OF YARBROUGH DRIVE
TO 1.3 MILES EAST
OF LOOP 375 (JOE BATTLE)
EL PASO COUNTY, TEXAS
JOB No.: 31059B
CONTRACT NO. 24-8XXP1011
WA# 2, SWA#5
DATE: AUGUST, 2012
FIELDBOOK No.: 7839, 7953, 8766

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR
2/6/1?

CONTROL SHEET
SHEET 3 OF 13

SURVEY DATE: AUGUST, 2012

SAM INC.
SURVEYING · AERIAL MAPPING · ENGINEERING
4801 Southwest Parkway
Parkway Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029

Texas Department of Transportation

SURVEY CONTROL INDEX SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			23
STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.
6372	89	001	SL 375

TECH: JLB
DATE: 10/10/2012
JOB#: 31059B
HORIZONTAL DATUM: DERIVED FROM NAD-83
NGS: CEO135, CEO141
VERTICAL DATUM: DERIVED FROM NAVD-88. PT: 5, 21
COORDINATE SYSTEM: TEXAS STATE PLANE NAD83 (HARN 93)/NAVD88
ZONE: TEXAS CENTRAL
UNITS: U.S. SURVEY FEET

COMBINED SCALE FACTOR: 1.00023100

NOTE: USED PREVIOUSLY ESTABLISHED CONTROL (CSJ No.0374-02-045)

(PT, NORTHING, EASTING, ELEVATION, DESCRIPTOR)

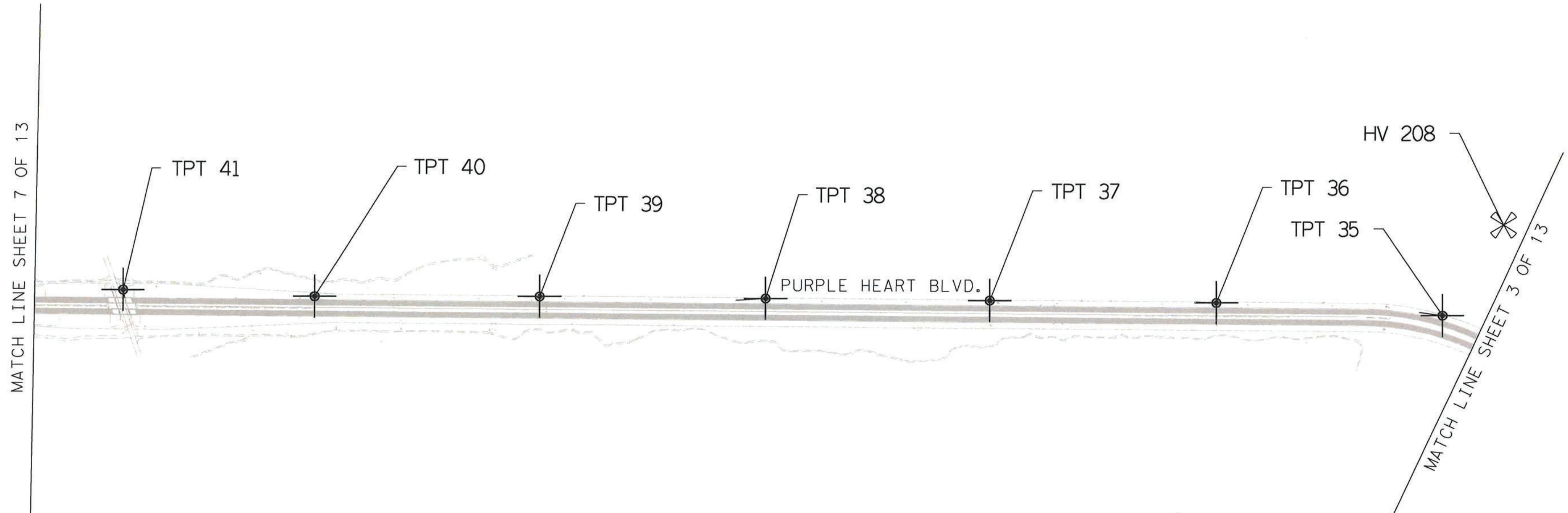
SURVEY CONTROL INDEX SHEET

HORIZONTAL / VERTICAL CONTROL
SURFACE COORDINATES

PT	NORTH	EAST	ELEV	DESCRIPTION
36	10677659.96	451902.91	4013.56	1/2"W/PCAP
37	10678306.06	450449.29	4023.17	1/2"W/PCAP
38	10678943.63	449009.36	4018.59	1/2"W/PCAP
39	10679584.68	447562.12	4014.02	1/2"W/PCAP
40	10680210.88	446114.42	4005.97	1/2"W/PCAP
41	10680786.30	444897.12	4000.71	1/2"W/PCAP

N

LAYOUT SCALE
(IN FEET)
400 0 400 800
1" = 800' (11"x17")
1" = 400' (22"x34")



NOTES:

1. ALL PROJECT COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 HARN(93)/NAVD 88. ALL COORDINATES SHOWN HEREON ARE ADJUSTED TO SURFACE BY MULTIPLYING BY A COMBINED ADJUSTMENT FACTOR OF 1.00023100.
UNITS: U.S. SURVEY FEET.

2. PROJECT CONTROL VALUES WERE ESTABLISHED BY CONSTRAINING TO NGS MONUMENTS CEO135 AND CEO141 FROM TXDOT EL PASO CSJ # 0374-02-045.

MONTANA AVENUE - US 62 / 180
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OF YARBROUGH DRIVE
TO 1.3 MILES EAST
OF LOOP 375 (JOE BATTLE)
EL PASO COUNTY, TEXAS
JOB No.: 31059B
CONTRACT NO. 24-8XXP1011
WA# 2, SWA#5
DATE: AUGUST, 2012
FIELDBOOK No.: 7839, 7953, 8766

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

2/6/19

CONTROL SHEET
SHEET 6 OF 13

SURVEY DATE: AUGUST, 2012

SAM INC.
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Austin, Texas 78735
(512) 447-0575
Fax: (512) 326-3029

Texas Department of Transportation

SURVEY CONTROL INDEX SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			24
STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.
6372	89	001	SL 375

SURVEY CONTROL INDEX SHEET

TECH: JLB
DATE: 10/10/2012
JOB#: 31059B
HORIZONTAL DATUM: DERIVED FROM NAD-83
NGS: CE0135, CE0141
VERTICAL DATUM: DERIVED FROM NAVD-88. PT: 5, 21
COORDINATE SYSTEM: TEXAS STATE PLANE NAD83 (HARN 93)/NAVD88
ZONE: TEXAS CENTRAL
UNITS: U.S. SURVEY FEET

COMBINED SCALE FACTOR: 1.00023100

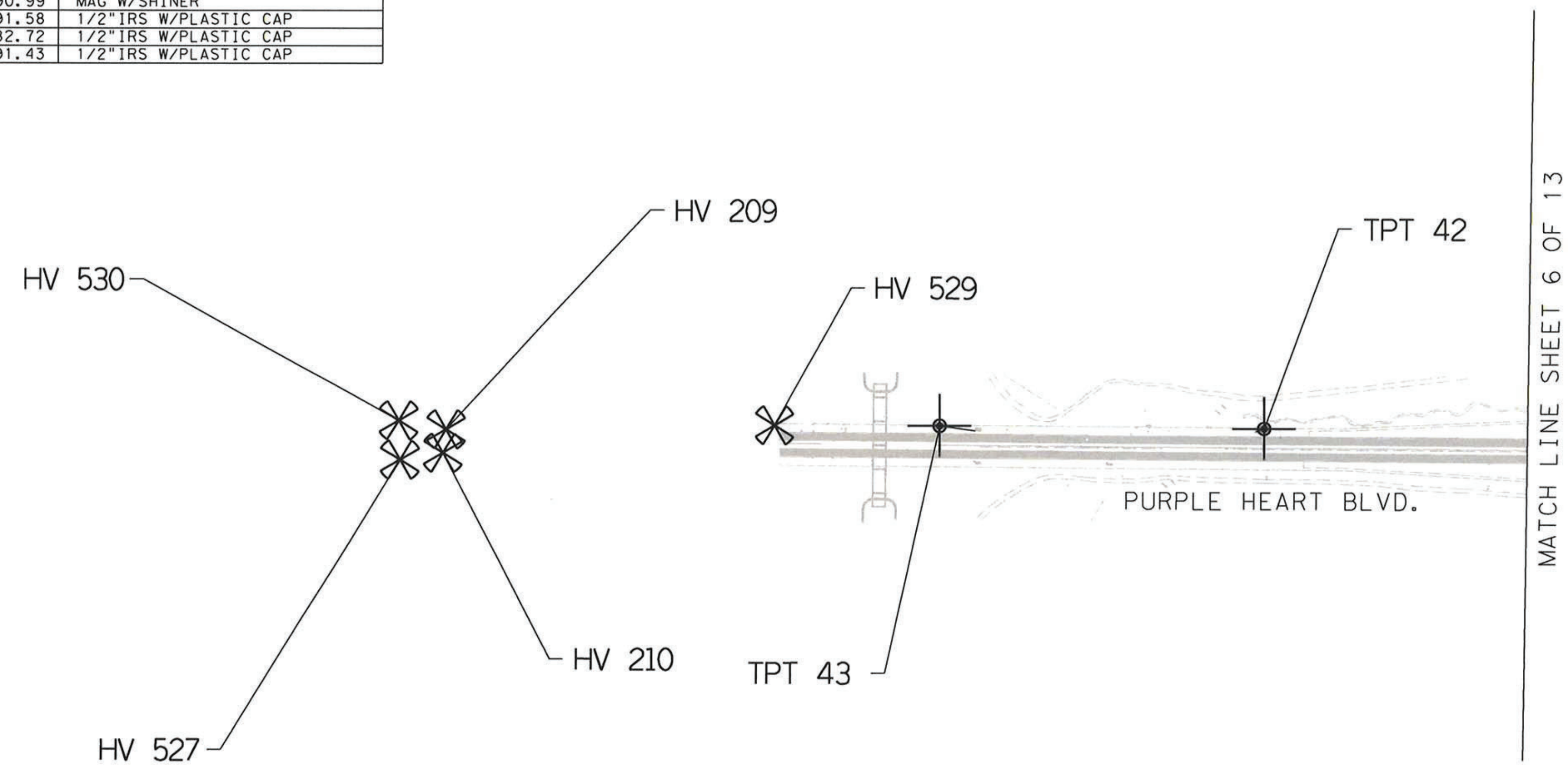
NOTE: USED PREVIOUSLY ESTABLISHED CONTROL (CSJ No. 0374-02-045)

(PT, NORTHING, EASTING, ELEVATION, DESCRIPTOR)

HORIZONTAL / VERTICAL CONTROL
SURFACE COORDINATES

PT	NORTH	EAST	ELEV	DESCRIPTION
42	10681528.32	443173.02	3983.53	1/2"IRS W/PLASTIC CAP
43	10682157.66	441750.70	3984.05	1/2"IRS W/PLASTIC CAP
209	10683079.57	439570.99	3990.73	MAG W/SHINER
210	10682981.76	439512.64	3990.99	MAG W/SHINER
527	10683033.53	439308.75	3991.58	1/2"IRS W/PLASTIC CAP
529	10682473.70	441024.55	3982.72	1/2"IRS W/PLASTIC CAP
530	10683209.45	439377.62	3991.43	1/2"IRS W/PLASTIC CAP

LAYOUT SCALE
(IN FEET)
400 0 400 800
1" = 800' (11"x17")
1" = 400' (22"x34")



STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR
2/6/14

NOTES:

1. ALL PROJECT COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 HARN(93)/NAVD 88. ALL COORDINATES SHOWN HEREON ARE ADJUSTED TO SURFACE BY MULTIPLYING BY A COMBINED ADJUSTMENT FACTOR OF 1.00023100. UNITS: U.S. SURVEY FEET.

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JOB No.: 31059B
CONTRACT NO. 24-8XXP1011
WA# 2, SWA#5
DATE: AUGUST, 2012
FIELDBOOK No.: 7839, 7953, 8766

CONTROL SHEET
SHEET 7 OF 13

SURVEY DATE: AUGUST, 2012

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(512) 447-0575
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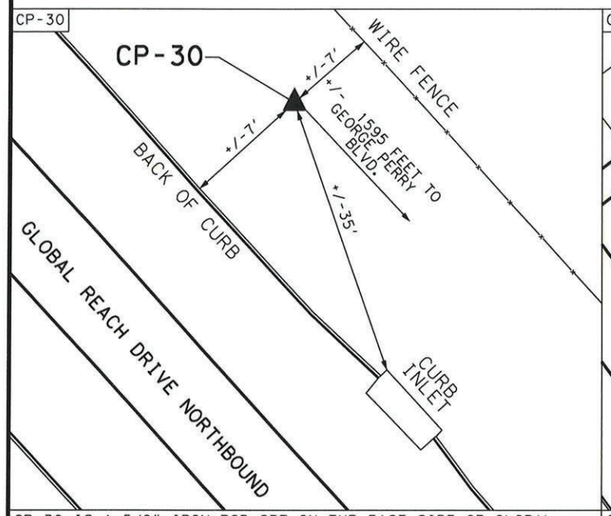
Texas Department of Transportation

SURVEY CONTROL INDEX SHEET

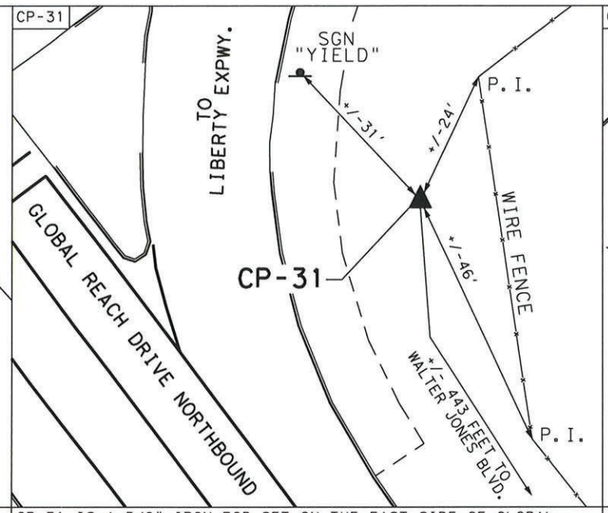
FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			25
STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.
6372	89	001	SL 375

HORIZONTAL & VERTICAL CONTROL SHEET



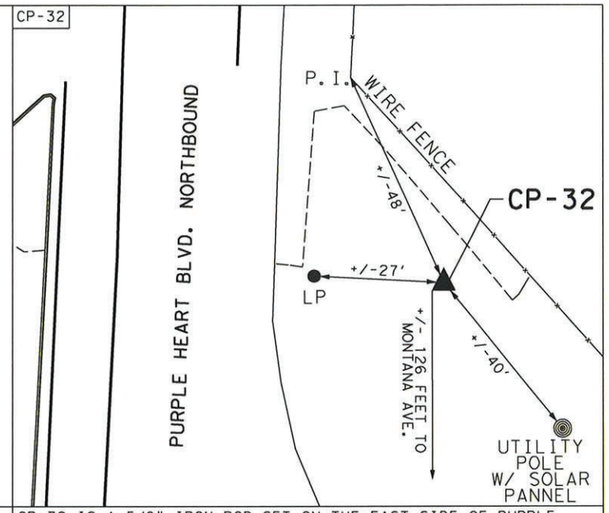
CP-30 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF GLOBAL REACH, APPROXIMATELY 1595 FEET NORTH OF GEORGE PERRY BLVD.

SURFACE COORDINATES
NORTHING: 10681402.45
EASTING: 425531.41
ELEVATION: 3948.93'



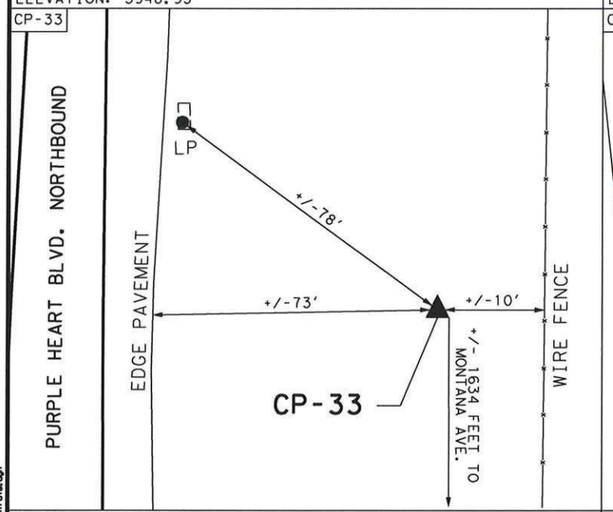
CP-31 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF GLOBAL REACH, APPROXIMATELY 443 FEET NORTH OF WALTER JONES BLVD.

SURFACE COORDINATES
NORTHING: 10682460.40
EASTING: 424674.12
ELEVATION: 3938.72'



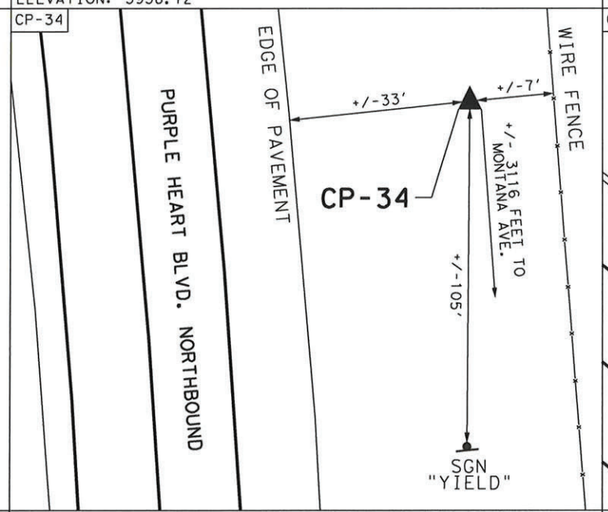
CP-32 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 126 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10672610.32
EASTING: 454053.01
ELEVATION: 4008.55'



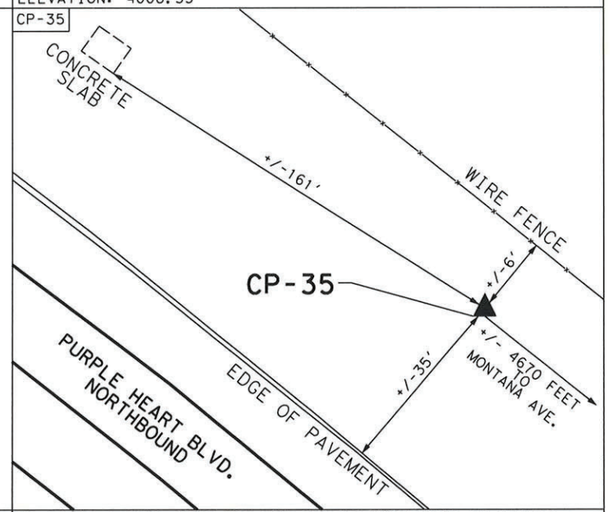
CP-33 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 1634 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10674118.17
EASTING: 454036.29
ELEVATION: 4009.22'



CP-34 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 3116 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10675600.20
EASTING: 454038.31
ELEVATION: 4009.24'



CP-35 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 4670 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10676947.09
EASTING: 453325.69
ELEVATION: 3997.09'

NOTES:

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MONTANA AVENUE - US 62 / 180
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EL PASO COUNTY, TEXAS
JOB No.: 31059B
CONTRACT NO. 24-8XXP1011
WA# 2, SWA#5
DATE: AUGUST, 2012
FIELDBOOK No.: 7839, 7953, 8766

CONTROL SHEET
SHEET 11 OF 13

N

NOT TO SCALE

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

2/6/19

SURVEY DATE: AUGUST, 2012

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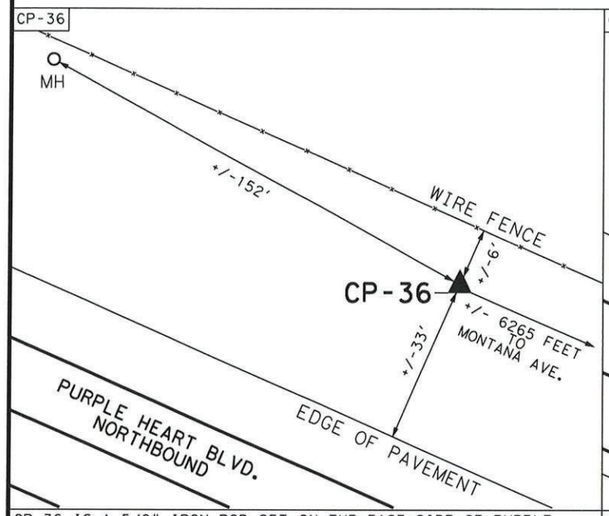
Texas Department of Transportation

HORIZONTAL & VERTICAL CONTROL SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			26
STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.
6372	89	001	SL 375

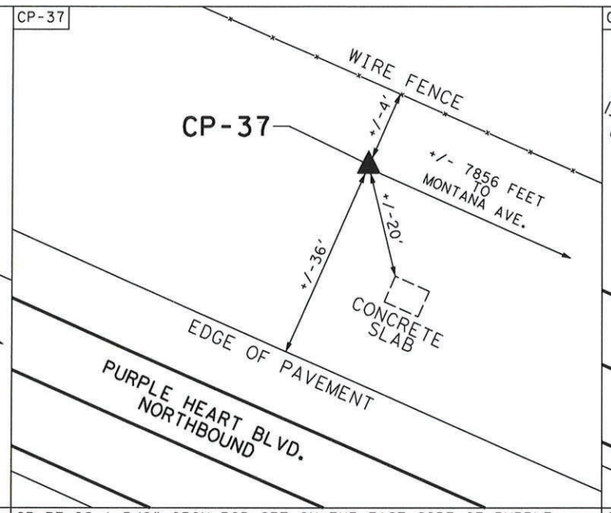
FILE:\\TxDOT 2011\El Paso District 31059\31059B-Montana Ave\Dgn\Control\Montana-HVControl8.dgn

HORIZONTAL & VERTICAL CONTROL SHEET



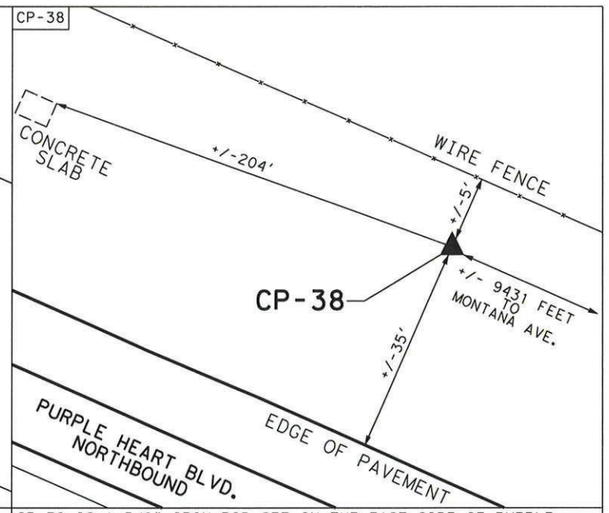
CP-36 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 6265 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10677659.96
EASTING: 451902.91
ELEVATION: 4013.56'



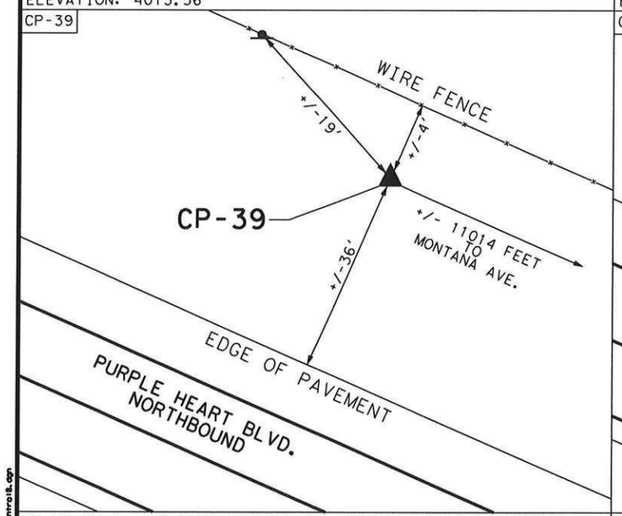
CP-37 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 7856 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10678306.06
EASTING: 450449.29
ELEVATION: 4023.17'



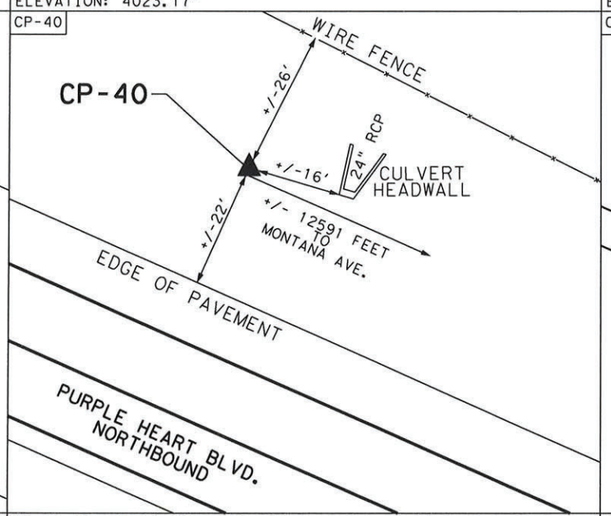
CP-38 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 9431 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10678943.63
EASTING: 449009.36
ELEVATION: 4018.59'



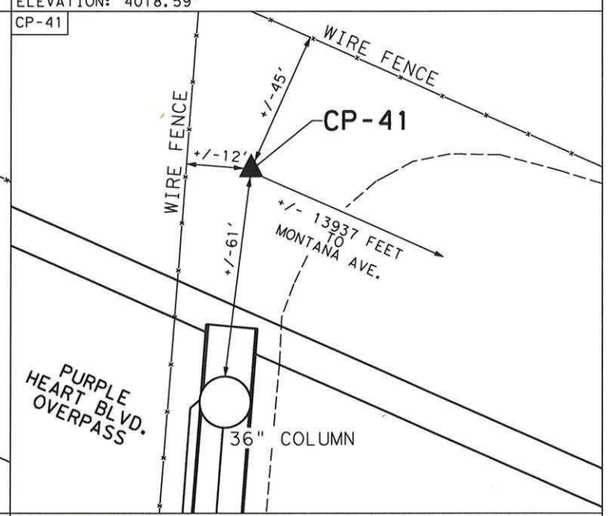
CP-39 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 11014 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10679584.68
EASTING: 447562.12
ELEVATION: 4014.02'



CP-40 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 12591 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10680210.88
EASTING: 446114.42
ELEVATION: 4005.97'



CP-41 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 13937 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10680786.30
EASTING: 444897.12
ELEVATION: 4000.71'

NOTES:

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EL PASO COUNTY, TEXAS
JOB No.: 31059B
CONTRACT NO. 24-8XXP1011
WA# 2, SWA#5
DATE: AUGUST, 2012
FIELDBOOK No.: 7839, 7953, 8766

CONTROL SHEET
SHEET 12 OF 13

N

NOT TO SCALE

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

2/6/19

SURVEY DATE: AUGUST, 2012

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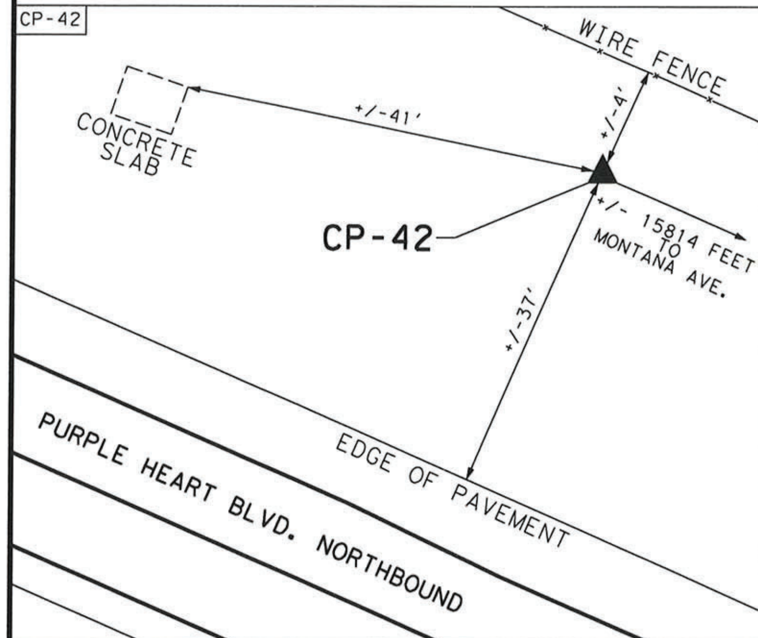
Texas Department of Transportation

HORIZONTAL & VERTICAL CONTROL SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			27
STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.
6372	89	001	SL 375

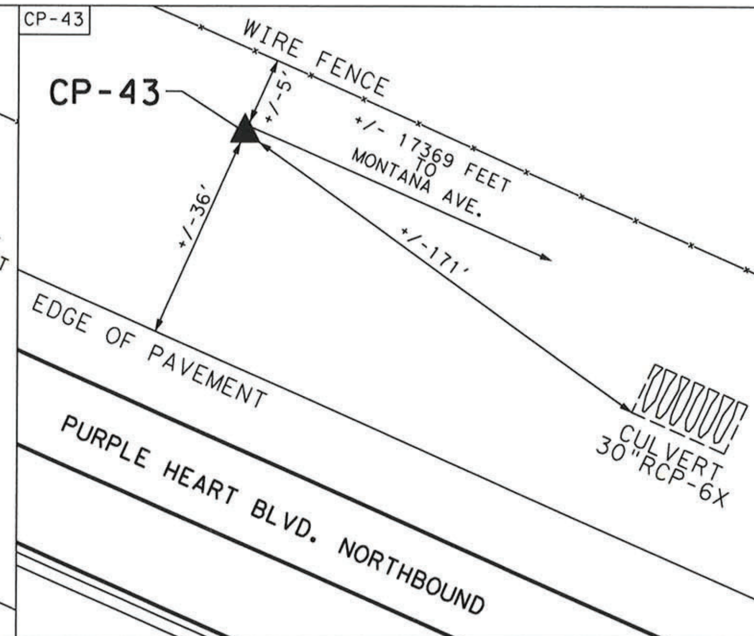
FILE:\\TxDOT 2011\El Paso District 31059\31059-Montana Ave\dgn\Control\Montana-HControls.dgn

HORIZONTAL & VERTICAL CONTROL SHEET



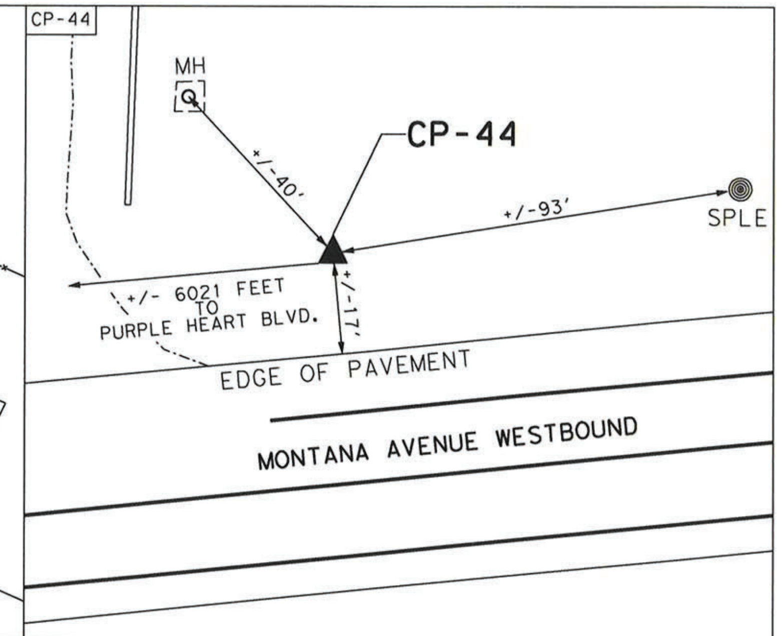
CP-42 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 15814 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10681528.32
EASTING: 443173.02
ELEVATION: 3983.53'



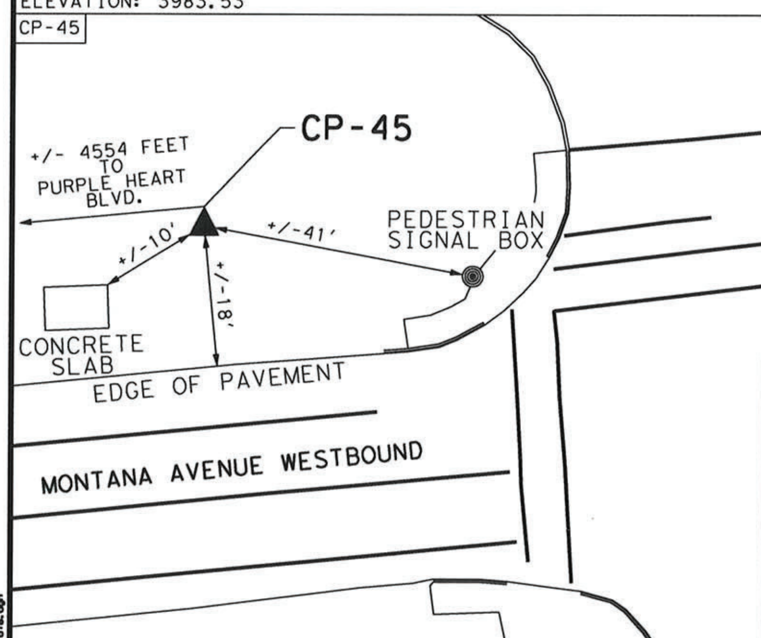
CP-43 IS A 5/8" IRON ROD SET ON THE EAST SIDE OF PURPLE HEART, APPROXIMATELY 17369 FEET NORTH OF MONTANA AVENUE.

SURFACE COORDINATES
NORTHING: 10682157.66
EASTING: 441750.70
ELEVATION: 3984.05'



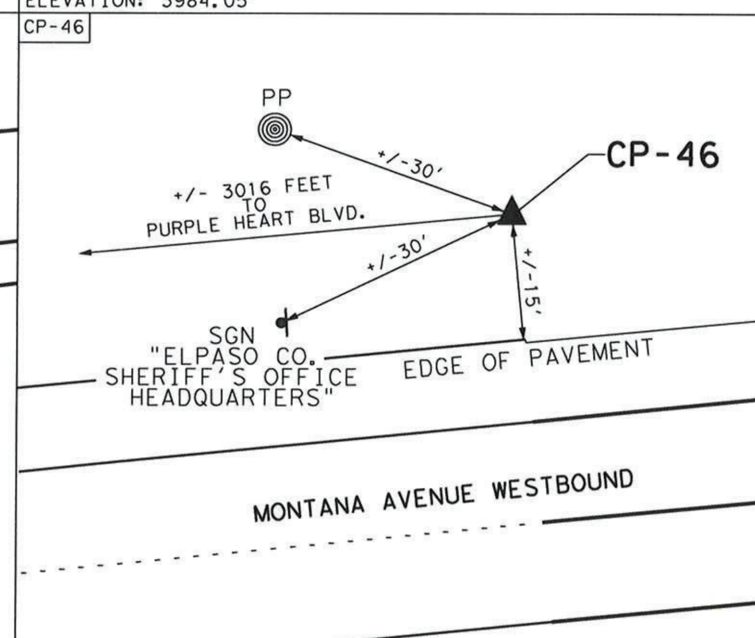
CP-44 IS A 5/8" IRON ROD SET ON THE NORTH SIDE OF MONTANA, APPROXIMATELY 6021 FEET EAST OF PURPLE HEART.

SURFACE COORDINATES
NORTHING: 10673098.93
EASTING: 460004.38
ELEVATION: 4012.70'



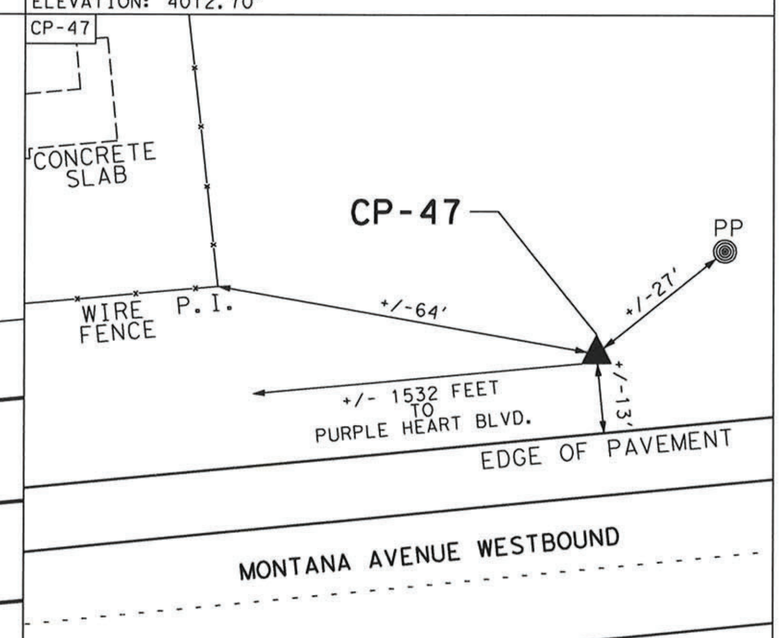
CP-45 IS A 5/8" IRON ROD SET ON THE NORTH SIDE OF MONTANA, APPROXIMATELY 4554 FEET EAST OF PURPLE HEART.

SURFACE COORDINATES
NORTHING: 10672955.48
EASTING: 458543.78
ELEVATION: 4006.00'



CP-46 IS A 5/8" IRON ROD SET ON THE NORTH SIDE OF MONTANA, APPROXIMATELY 3016 FEET EAST OF PURPLE HEART.

SURFACE COORDINATES
NORTHING: 10672800.59
EASTING: 457013.53
ELEVATION: 4001.53'



CP-47 IS A 5/8" IRON ROD SET ON THE NORTH SIDE OF MONTANA, APPROXIMATELY 1532 FEET EAST OF PURPLE HEART.

SURFACE COORDINATES
NORTHING: 10672652.03
EASTING: 455537.47
ELEVATION: 3987.02'

N

NOT TO SCALE

STATE OF TEXAS
REGISTERED
SCOTT C. BRASHEAR
6660
PROFESSIONAL
LAND SURVEYOR

SCB
2/6/19

SURVEY DATE: AUGUST, 2012

SAM INC.
SURVEYING · AERIAL MAPPING · ENGINEERING
4801 Southwest Parkway
Parkway Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029

Texas Department of Transportation

HORIZONTAL & VERTICAL CONTROL SHEET

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			28
STATE	DISTRICT	COUNTY	
TEXAS	24	EL PASO	
CONTROL	SECTION	JOB	HIGHWAY NO.
6372	89	001	SL 375

NOTES:

1. ALL PROJECT COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 HARN(93)/NAVD 88. ALL COORDINATES SHOWN HEREON ARE ADJUSTED TO SURFACE BY MULTIPLYING BY A COMBINED ADJUSTMENT FACTOR OF 1.00023100. UNITS: U.S. SURVEY FEET.

2. PROJECT CONTROL VALUES WERE ESTABLISHED BY CONSTRAINING TO NGS MONUMENTS CE0135 AND CE0141 FROM TXDOT EL PASO CSJ # 0374-02-045.

MONTANA AVENUE - US 62 / 180
FROM 0.5 MILES WEST
OF YARBROUGH DRIVE
TO 1.3 MILES EAST
OF LOOP 375 (JOE BATTLE)
EL PASO COUNTY, TEXAS
JOB No.: 31059B
CONTRACT NO. 24-8XXP1011
WA# 2, SWA#5
DATE: AUGUST, 2012
FIELDBOOK No.: 7839, 7953, 8766

CONTROL SHEET

℄ SL 375 MAINLANE HORIZONTAL ALIGNMENT

Chain ML_LP375 contains:
CL201 CUR CL2-1 CUR CL2-2 CUR CL2-3 CUR CL2-4 CUR CL2-5 CUR CL2-6 CL202

Beginning chain ML_LP375 description

Point CL201 N 10,690,624.4521 E 434,904.3133 Sta 329+00.0000

Course from CL201 to PC CL2-1 S 23° 22′ 06.93" E Dist 2,860.5139

Curve Data					
Curve CL2-1					
P.I. Station	362+72.2342	N	10,687,528.8349	E	436,241.8923
Delta =	5° 06′ 49.70"	(LT)			
Degree =	0° 30′ 00.00"				
Tangent =	511.7203				
Length =	1,022.7610				
Radius =	11,459.1560				
External =	11.4200				
Long Chord =	1,022.4216				
Mid. Ord. =	11.4086				
P.C. Station	357+60.5139	N	10,687,998.5799	E	436,038.9211
P.T. Station	367+83.2750	N	10,687,079.0514	E	436,485.9259
C.C.		N	10,692,543.7939	E	446,558.1077
Back = S	23° 22′ 06.93" E				
Ahead = S	28° 28′ 56.63" E				
Chord Bear = S	25° 55′ 31.78" E				

Curve Data					
Curve CL2-2					
P.I. Station	377+33.1879	N	10,686,244.1124	E	436,938.9287
Delta =	9° 28′ 38.86"	(RT)			
Degree =	0° 30′ 00.00"				
Tangent =	949.9130				
Length =	1,895.4921				
Radius =	11,459.1560				
External =	39.3044				
Long Chord =	1,893.3319				
Mid. Ord. =	39.1700				
P.C. Station	367+83.2750	N	10,687,079.0514	E	436,485.9259
P.T. Station	386+78.7671	N	10,685,345.9787	E	437,248.2675
C.C.		N	10,681,614.3088	E	426,413.7442
Back = S	28° 28′ 56.63" E				
Ahead = S	19° 00′ 17.77" E				
Chord Bear = S	23° 44′ 37.20" E				

Curve Data					
Curve CL2-3					
P.I. Station	401+63.1476	N	10,683,942.5110	E	437,731.6555
Delta =	47° 06′ 31.55"	(LT)			
Degree =	1° 40′ 57.70"				
Tangent =	1,484.3805				
Length =	2,799.6013				
Radius =	3,405.0000				
External =	309.4866				
Long Chord =	2,721.4075				
Mid. Ord. =	283.7005				
P.C. Station	386+78.7671	N	10,685,345.9787	E	437,248.2675
P.T. Station	414+78.3684	N	10,683,341.4512	E	439,088.9000
C.C.		N	10,686,454.8157	E	440,467.6627
Back = S	19° 00′ 17.77" E				
Ahead = S	66° 06′ 49.32" E				
Chord Bear = S	42° 33′ 33.55" E				

Course from PT CL2-3 to PC CL2-4 S 66° 06′ 49.32" E Dist 209.8634

Curve Data					
Curve CL2-4					
P.I. Station	422+82.4759	N	10,683,015.8496	E	439,824.1364
Delta =	4° 49′ 35.77"	(RT)			
Degree =	0° 24′ 22.87"				
Tangent =	594.2442				
Length =	1,187.7854				
Radius =	14,100.0000				
External =	12.5166				
Long Chord =	1,187.4342				
Mid. Ord. =	12.5055				
P.C. Station	416+88.2318	N	10,683,256.4727	E	439,280.7888
P.T. Station	428+76.0171	N	10,682,730.3622	E	440,345.3111
C.C.		N	10,670,364.1264	E	433,571.3749
Back = S	66° 06′ 49.32" E				
Ahead = S	61° 17′ 13.55" E				
Chord Bear = S	63° 42′ 01.44" E				

℄ SL 375 MAINLANE HORIZONTAL ALIGNMENT (CONT)

Curve Data					
Curve CL2-5					
P.I. Station	434+70.2613	N	10,682,444.8748	E	440,866.4858
Delta =	4° 49′ 35.77"	(LT)			
Degree =	0° 24′ 22.87"				
Tangent =	594.2441				
Length =	1,187.7854				
Radius =	14,100.0000				
External =	12.5166				
Long Chord =	1,187.4342				
Mid. Ord. =	12.5055				
P.C. Station	428+76.0171	N	10,682,730.3622	E	440,345.3111
P.T. Station	440+63.8025	N	10,682,204.2517	E	441,409.8334
C.C.		N	10,695,096.5980	E	447,119.2473
Back = S	61° 17′ 13.55" E				
Ahead = S	66° 06′ 49.32" E				
Chord Bear = S	63° 42′ 01.44" E				

Course from PT CL2-5 to PC CL2-6 S 66° 06′ 49.32" E Dist 11,456.0774

Curve Data					
Curve CL2-6					
P.I. Station	578+45.5820	N	10,676,623.6927	E	454,011.2146
Delta =	68° 40′ 05.34"	(RT)			
Degree =	1° 40′ 57.70"				
Tangent =	2,325.7021				
Length =	4,080.8425				
Radius =	3,405.0000				
External =	718.4591				
Long Chord =	3,840.9575				
Mid. Ord. =	593.2770				
P.C. Station	555+19.8799	N	10,677,565.4229	E	451,884.7070
P.T. Station	596+00.7224	N	10,674,300.3016	E	453,907.5608
C.C.		N	10,674,452.0584	E	450,505.9443
Back = S	66° 06′ 49.32" E				
Ahead = S	2° 33′ 16.02" W				
Chord Bear = S	31° 46′ 46.65" E				

Course from PT CL2-6 to CL202 S 2° 33′ 16.02" W Dist 1,962.4073

Point CL202 N 10,672,339.8443 E 453,820.0987 Sta 615+63.1297

Ending chain ML_LP375 description

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

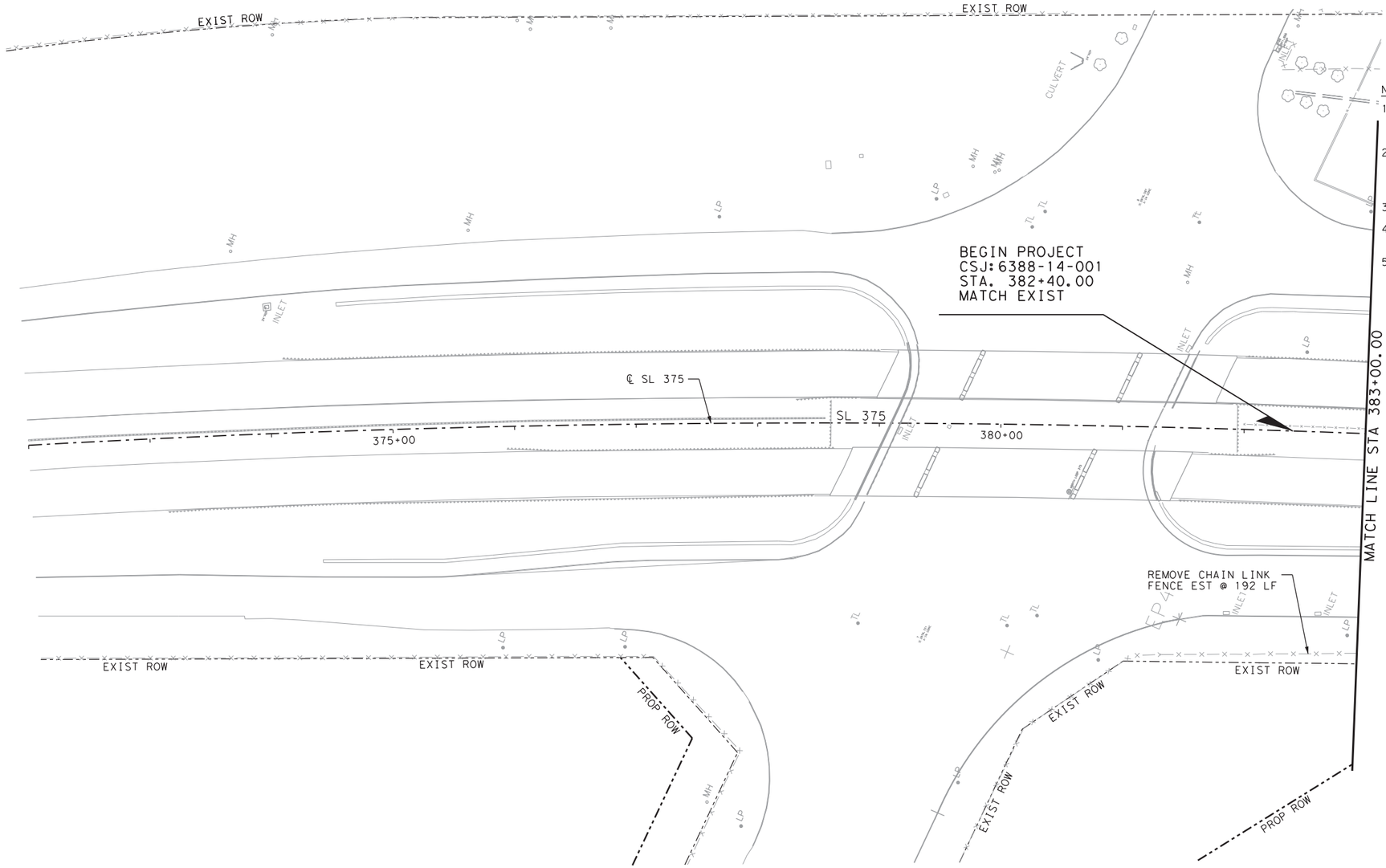
HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 1

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.			SHEET
6	RMC 6388-14-001			29
STATE	DIST.	COUNTY		
TEXAS	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
6388	14	001	SL 375	

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
2. ITEM 550-6008 SHALL INCLUDE A 7 FOOT TALL FENCE WITH A 1 FOOT SINGLE EXTENSION ARM AND 3 STRAND BARBED WIRE FENCE ON TOP TO BE SUBSIDARY TO ITEM 550-6008. SEE DETAIL SHEET UFC 701 AND UFC 702.
3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
550	6003	CHAIN LINK FENCE (REMOVE)	LF	192

STATE OF TEXAS
LIZARDO CEBALLOS
115555
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Lizardo Ceballos P.E.

9/9/2021

Texas Department of Transportation

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SL 375

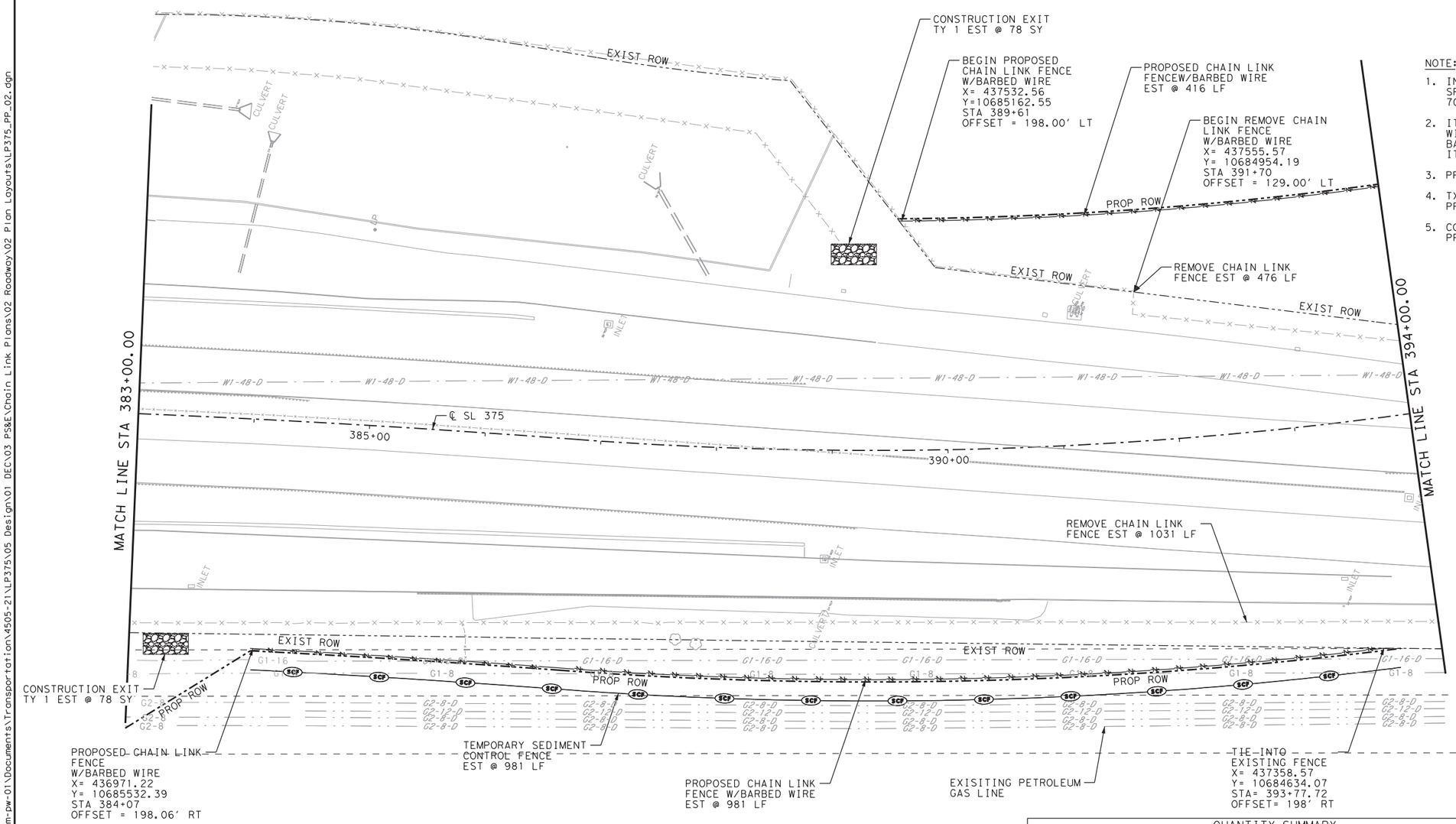
CHAIN LINK FENCE PLAN LAYOUT BEGIN TO STA 383+00

SCALE: HOR: 1" = 100' SHEET 1 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		30
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- CONSTRUCTION EXIT



NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
2. ITEM 550-6008 SHALL INCLUDE A 7 FOOT TALL FENCE WITH A 1 FOOT SINGLE EXTENSION ARM AND 3 STRAND BARBED WIRE FENCE ON TOP TO BE SUBSIDARY TO ITEM 550-6008. SEE DETAIL SHEET UFC 701 AND UFC 702.
3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	981
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	981
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1507
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1397

STATE OF TEXAS
LIZARDO CEBALLOS
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9/9/2021

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T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-8570

SL 375

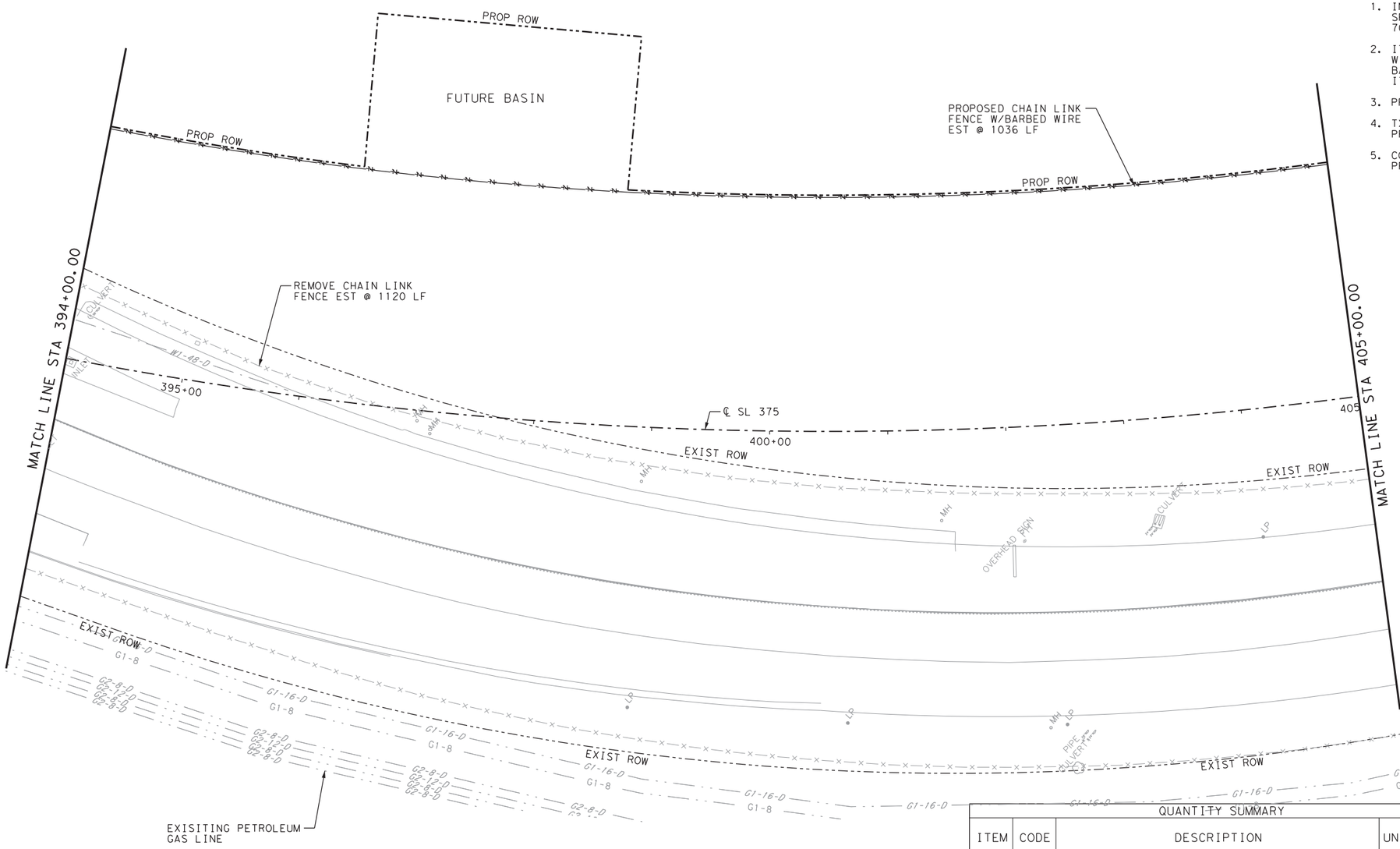
CHAIN LINK FENCE
PLAN LAYOUT
STA 383+00 TO STA 394+00

SCALE: HOR: 1" = 100' SHEET 2 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		31
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- CONSTRUCTION EXIT



NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
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4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	0
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	0
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1120
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1036

STATE OF TEXAS
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9/9/2021

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

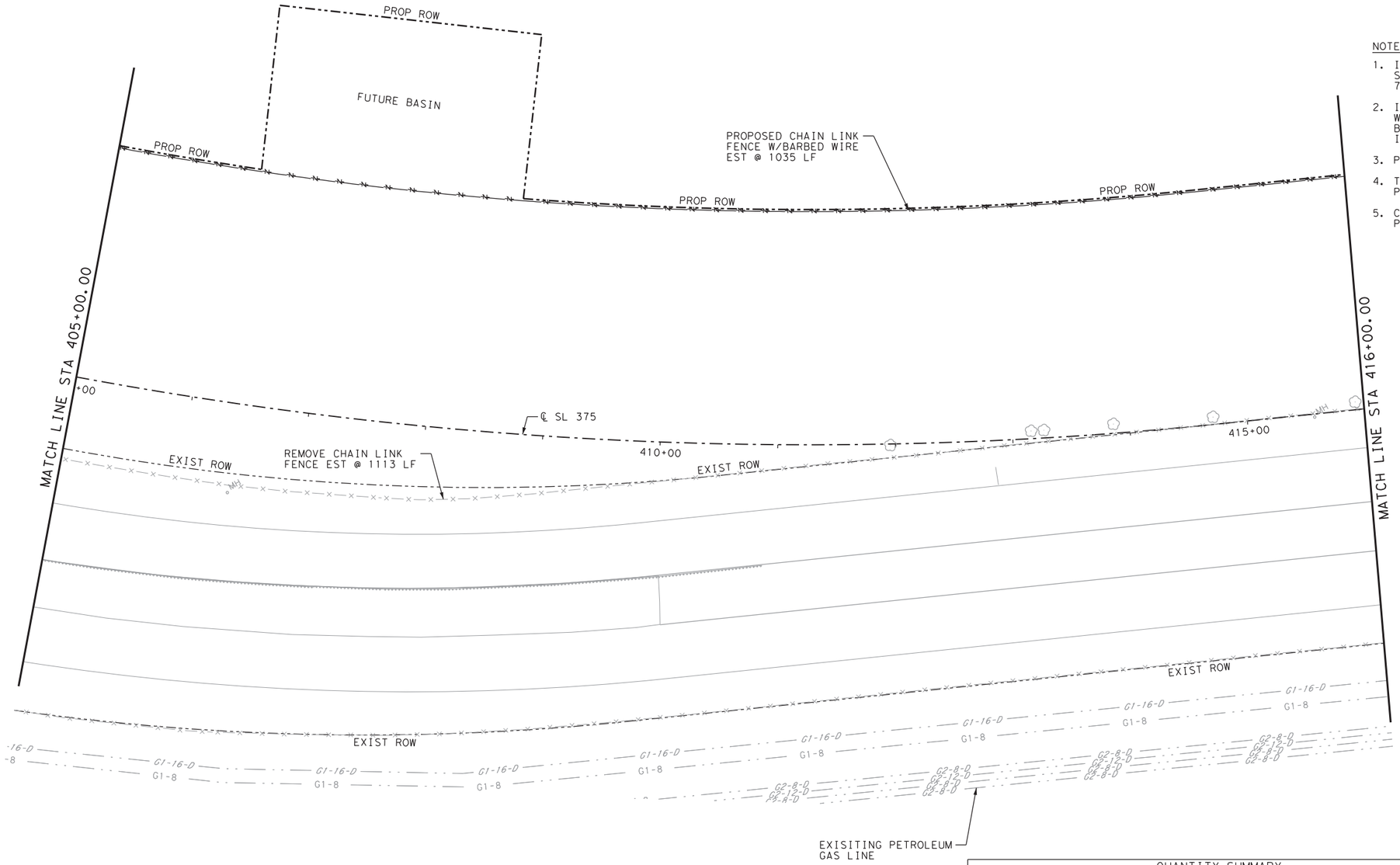
CHAIN LINK FENCE
PLAN LAYOUT
STA 394+00 TO STA 405+00

SCALE: HOR: 1" = 100' SHEET 3 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		32
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- CONSTRUCTION EXIT



NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
2. ITEM 550-6008 SHALL INCLUDE A 7 FOOT TALL FENCE WITH A 1 FOOT SINGLE EXTENSION ARM AND 3 STRAND BARBED WIRE FENCE ON TOP TO BE SUBSIDARY TO ITEM 550-6008. SEE DETAIL SHEET UFC 701 AND UFC 702.
3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	0
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	0
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1113
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1035

STATE OF TEXAS
LIZARDO CEBALLOS
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9/9/2021

Texas Department of Transportation

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 405+00 TO STA 416+00

SCALE: HOR: 1" = 100' SHEET 4 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		33
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

9:48:08 AM
9/9/2021
rene.ball
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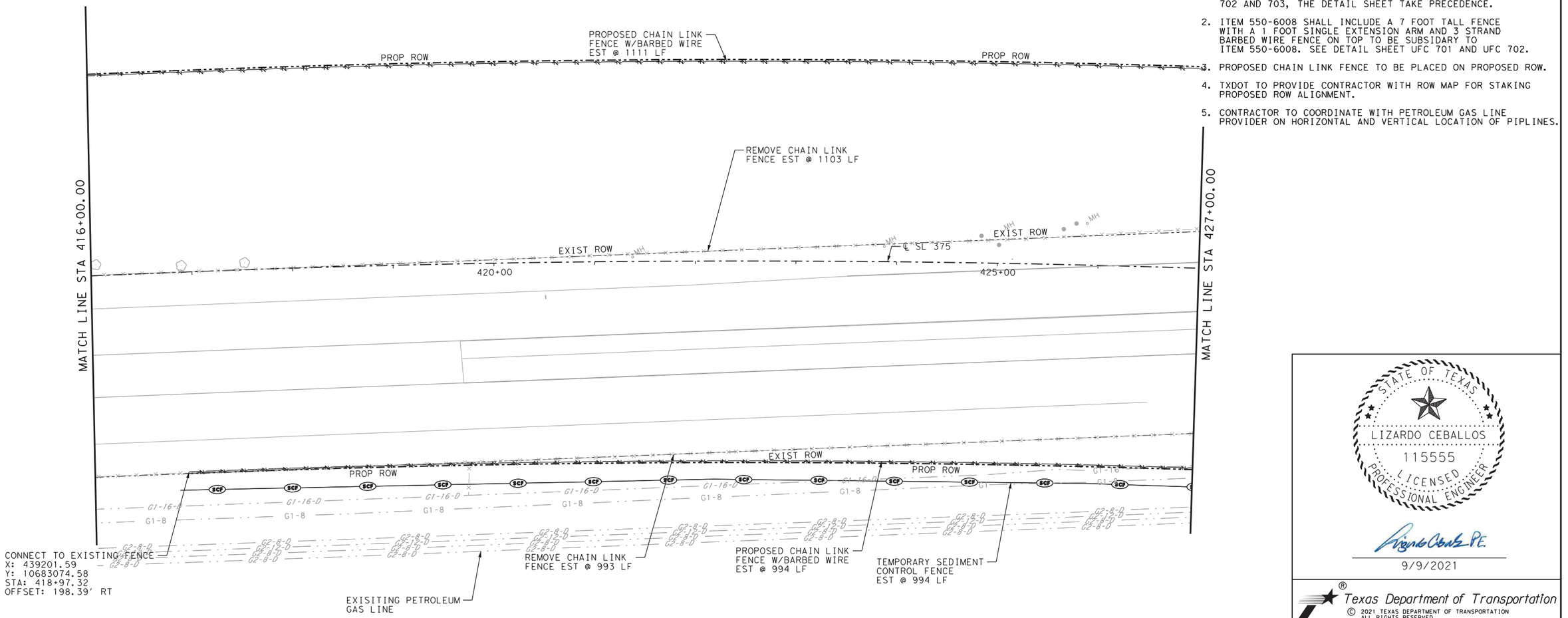
LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT

NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
2. ITEM 550-6008 SHALL INCLUDE A 7 FOOT TALL FENCE WITH A 1 FOOT SINGLE EXTENSION ARM AND 3 STRAND BARBED WIRE FENCE ON TOP TO BE SUBSIDARY TO ITEM 550-6008. SEE DETAIL SHEET UFC 701 AND UFC 702.
3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.



QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	994
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	994
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2096
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2105

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE PLAN LAYOUT STA 416+00 TO STA 427+00

SCALE: HOR: 1" = 100' SHEET 5 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		34
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

9:48:14 AM
9/9/2021
rene.bolli
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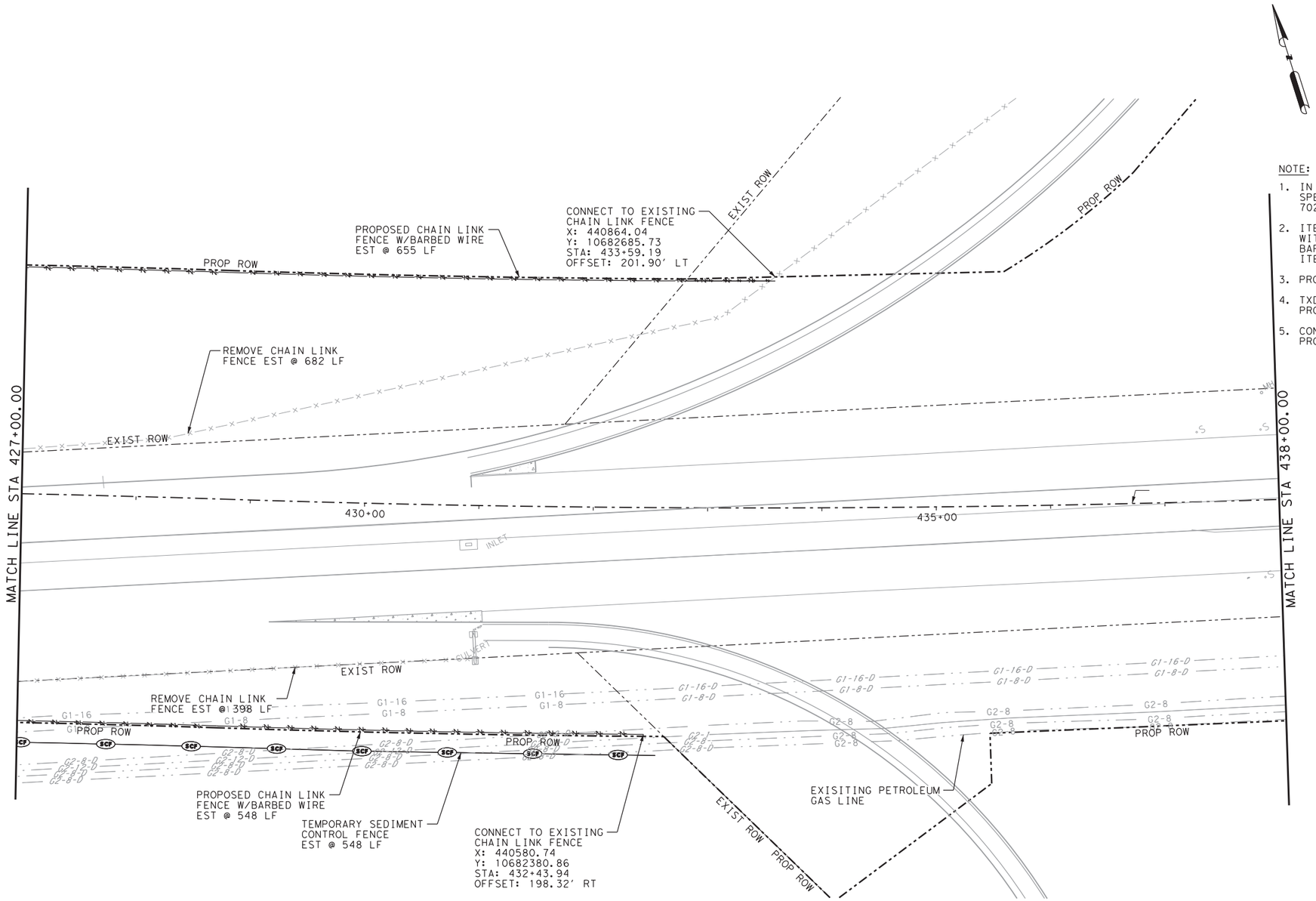
LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
2. ITEM 550-6008 SHALL INCLUDE A 7 FOOT TALL FENCE WITH A 1 FOOT SINGLE EXTENSION ARM AND 3 STRAND BARBED WIRE FENCE ON TOP TO BE SUBSIDARY TO ITEM 550-6008. SEE DETAIL SHEET UFC 701 AND UFC 702.
3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	548
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	548
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1080
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1203

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

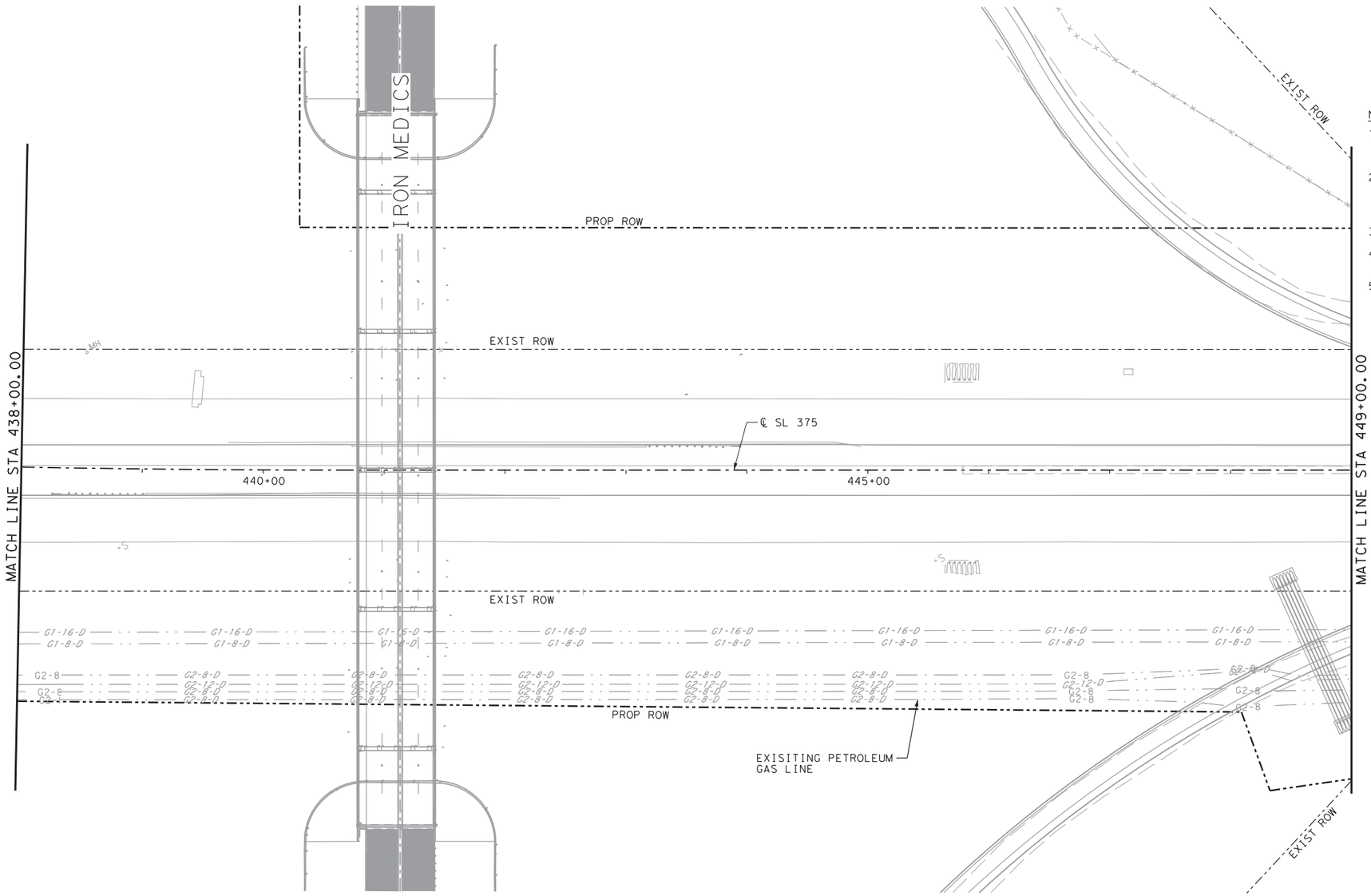
CHAIN LINK FENCE PLAN LAYOUT STA 427+00 TO STA 438+00

SCALE: HOR: 1" = 100' SHEET 6 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		35
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE (SCF)
- CONSTRUCTION EXIT



NOTE:

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3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	0
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	0
550	6003	CHAIN LINK FENCE (REMOVE)	LF	0
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	0

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 438+00 TO STA 449+00

SCALE: HOR: 1" = 100' SHEET 7 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		36
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

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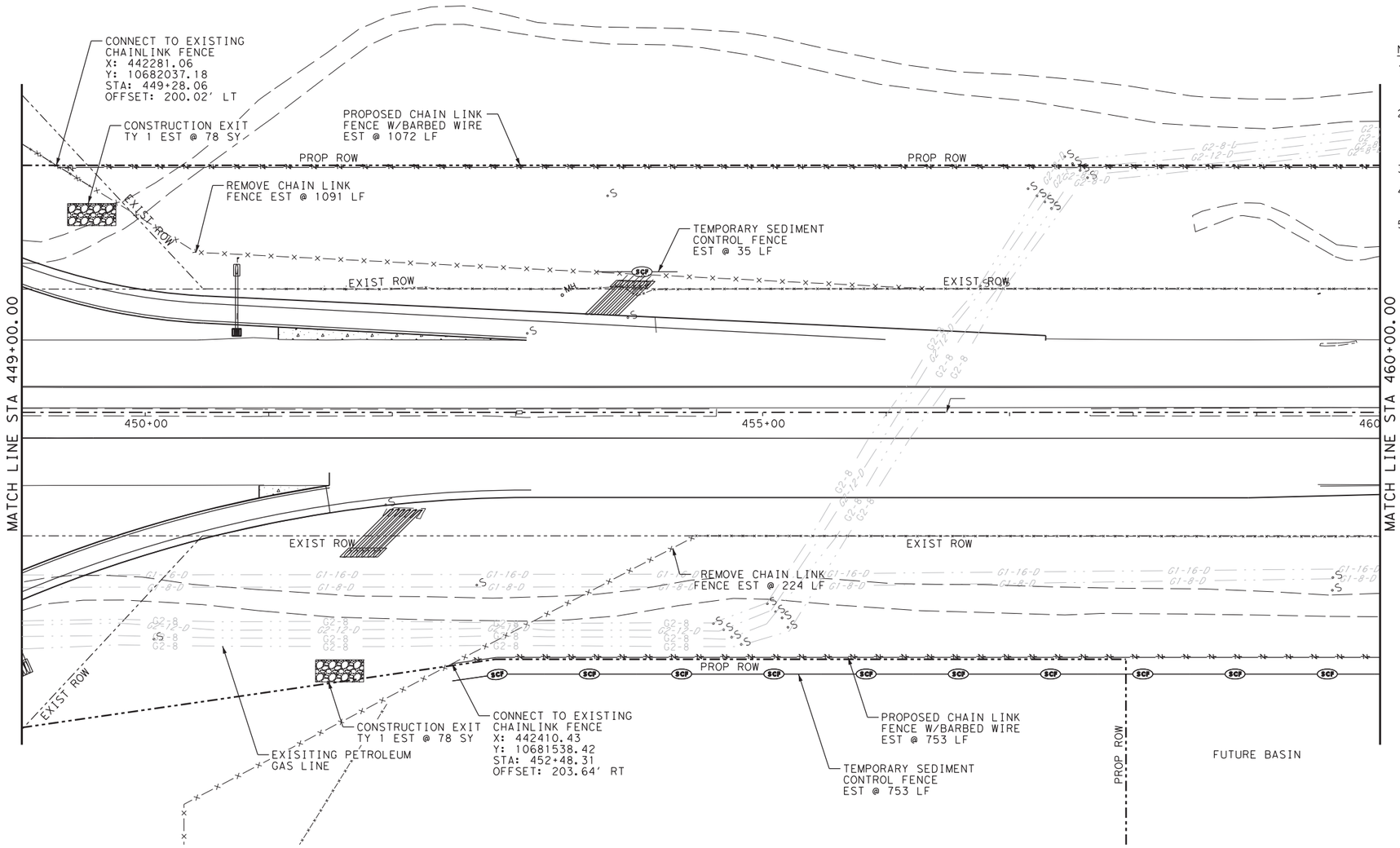
LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	788
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	788
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1315
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1825

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 449+00 TO STA 460+00

SCALE: 1" = 100'

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		37
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

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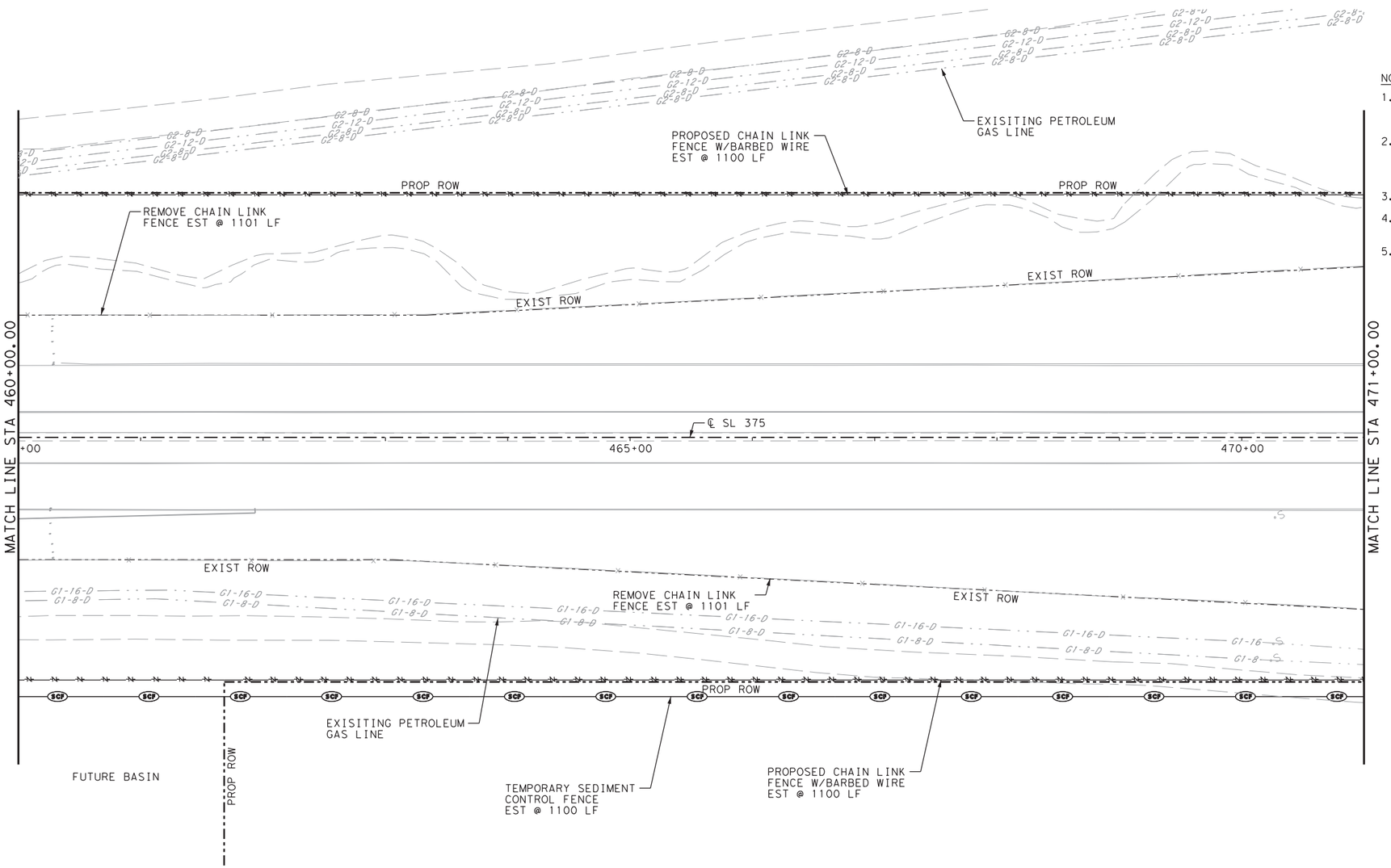
LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1100
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1100
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2202
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2200

STATE OF TEXAS
LIZARDO CEBALLOS
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9/9/2021

Texas Department of Transportation

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T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

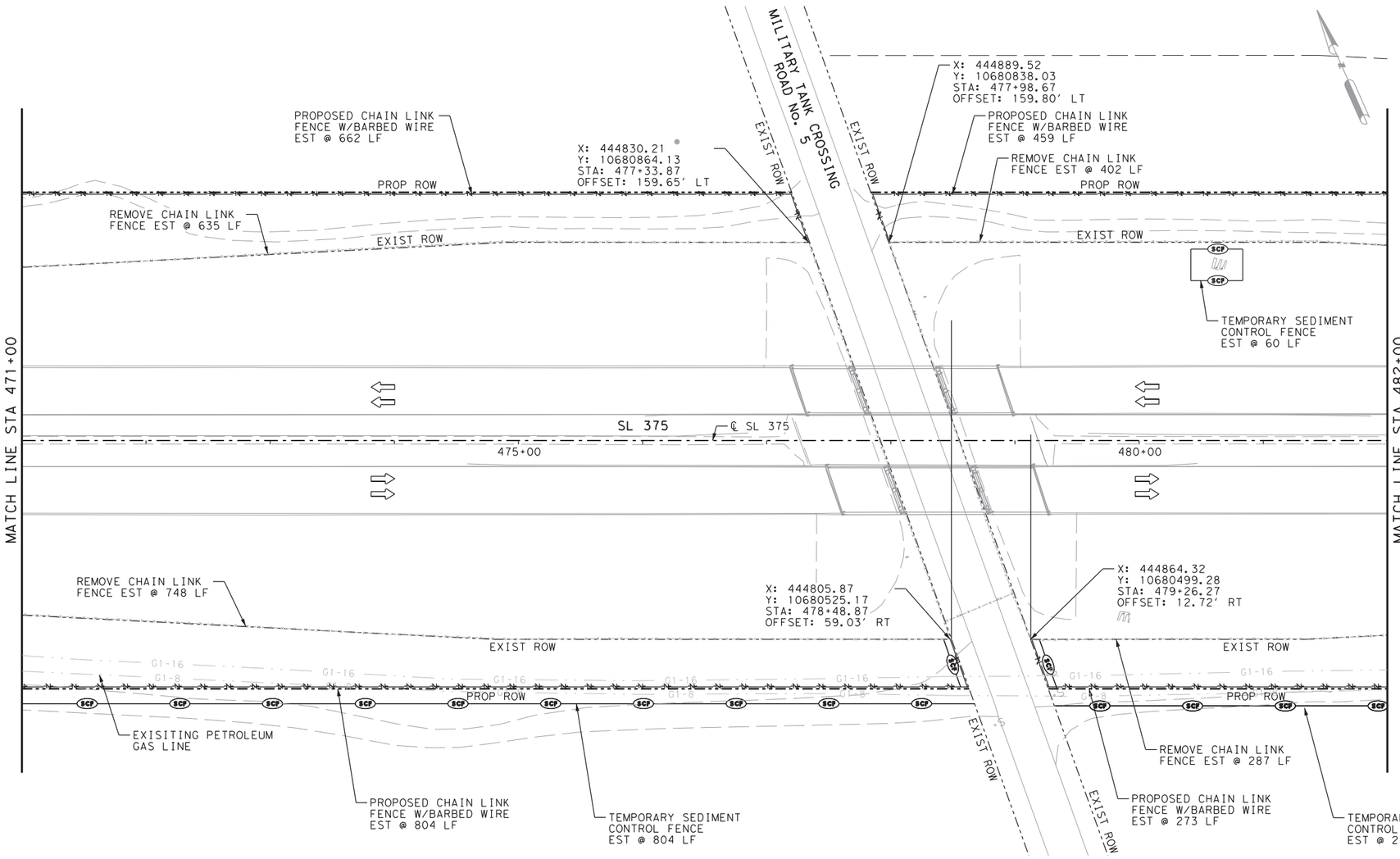
CHAIN LINK FENCE
PLAN LAYOUT
STA 460+00 TO STA 471+00

SCALE: 1" = 100' SHEET 9 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		38
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1137
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1137
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2072
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2252

STATE OF TEXAS
LIZARDO CEBALLOS
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9/9/2021

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DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #352
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375
CHAIN LINK FENCE PLAN LAYOUT STA 471+00 TO STA 482+00

SCALE: 1" = 100' SHEET 10 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.	SHEET
6	RMC 6388-14-001	39

STATE	DIST.	COUNTY
TEXAS	ELP	EL PASO

CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

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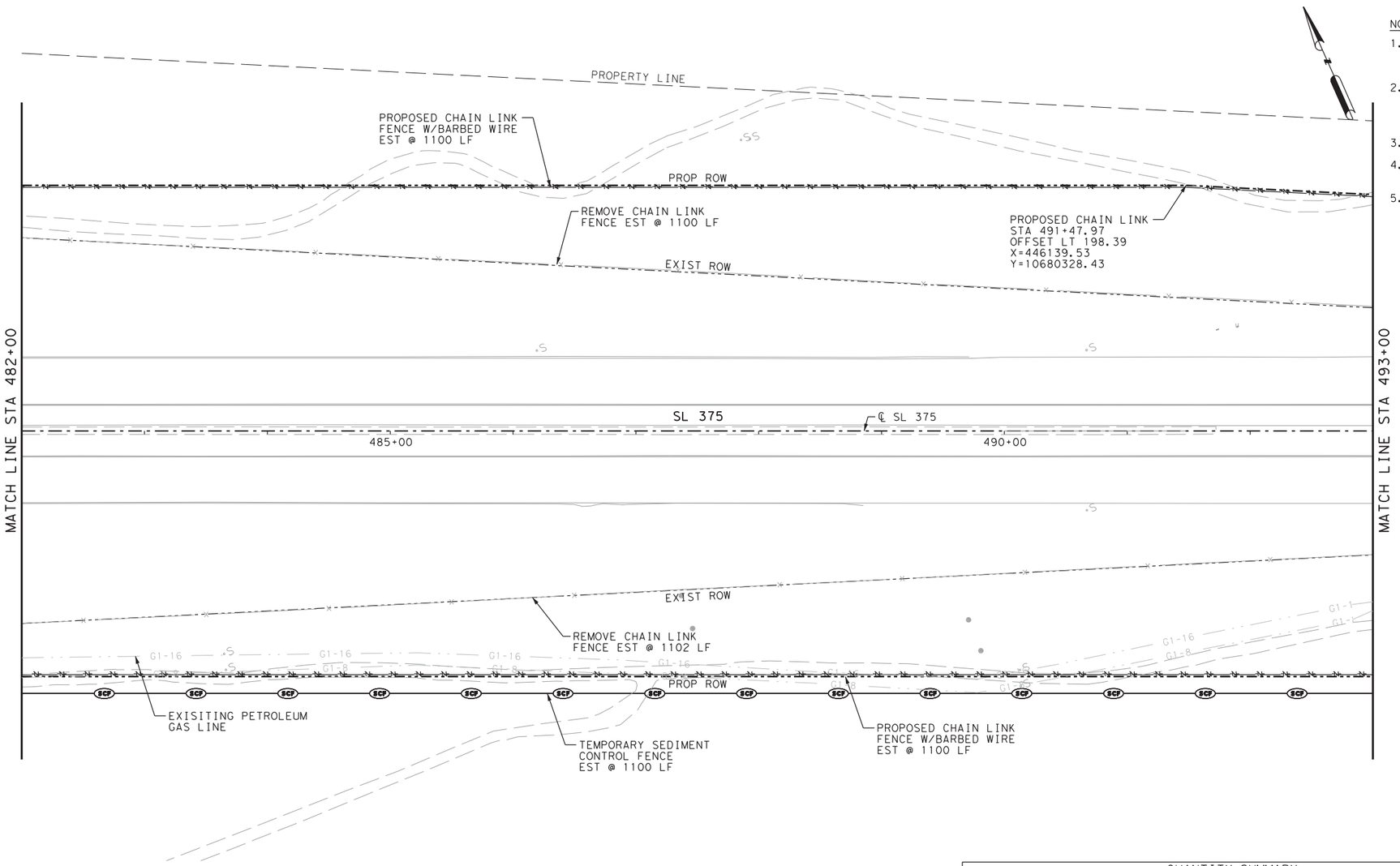
LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1100
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1100
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2202
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2200

STATE OF TEXAS
LIZARDO CEBALLOS
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LICENSED PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
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T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 482+00 TO STA 493+00

SCALE: 1" = 100' SHEET 11 OF 22

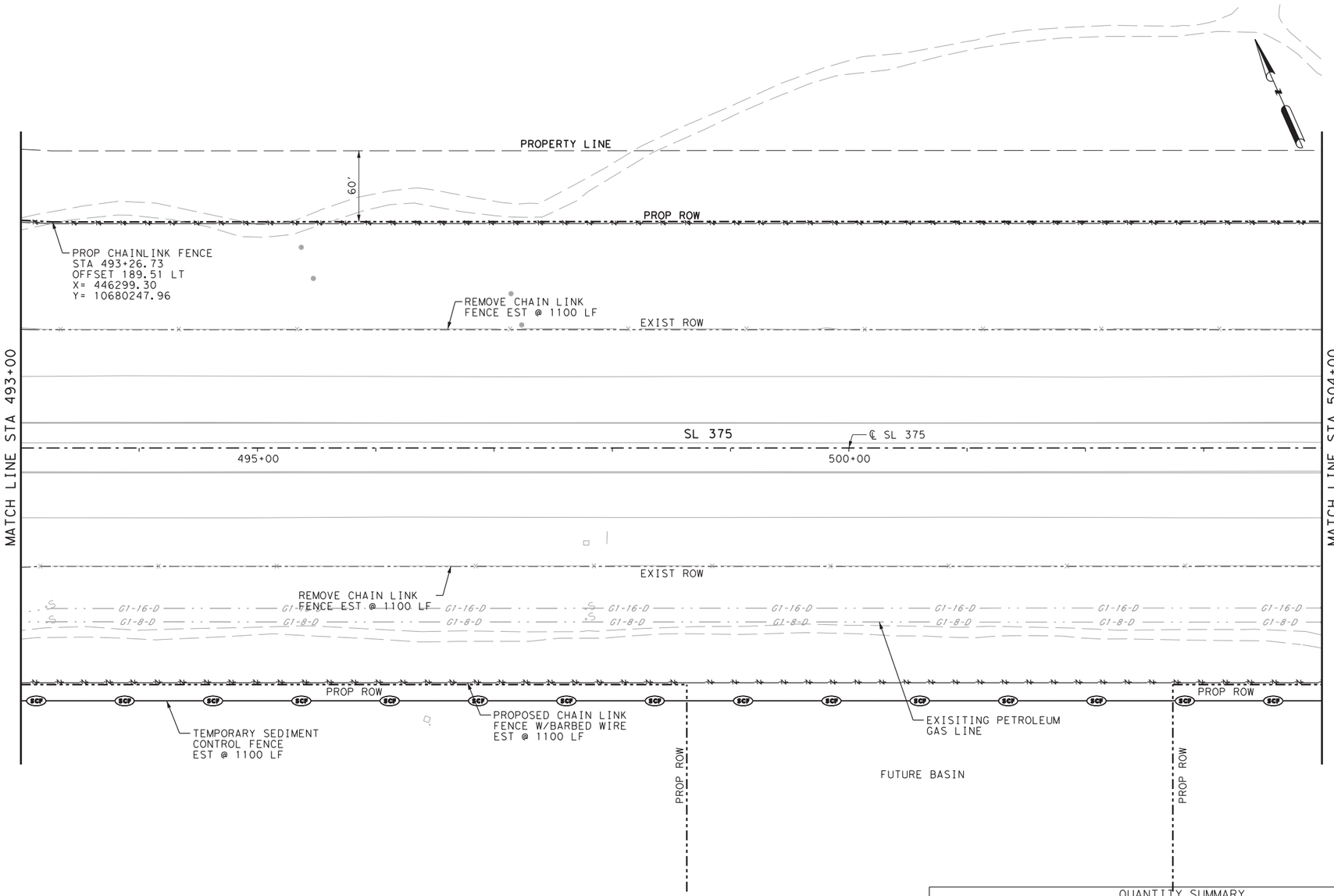
FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.	SHEET
6	RMC 6388-14-001	40

STATE	DIST.	COUNTY
TEXAS	ELP	EL PASO

CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1100
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1100
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2200
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2200

STATE OF TEXAS
LIZARDO CEBALLOS
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LICENSED PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 493+00 TO STA 504+00

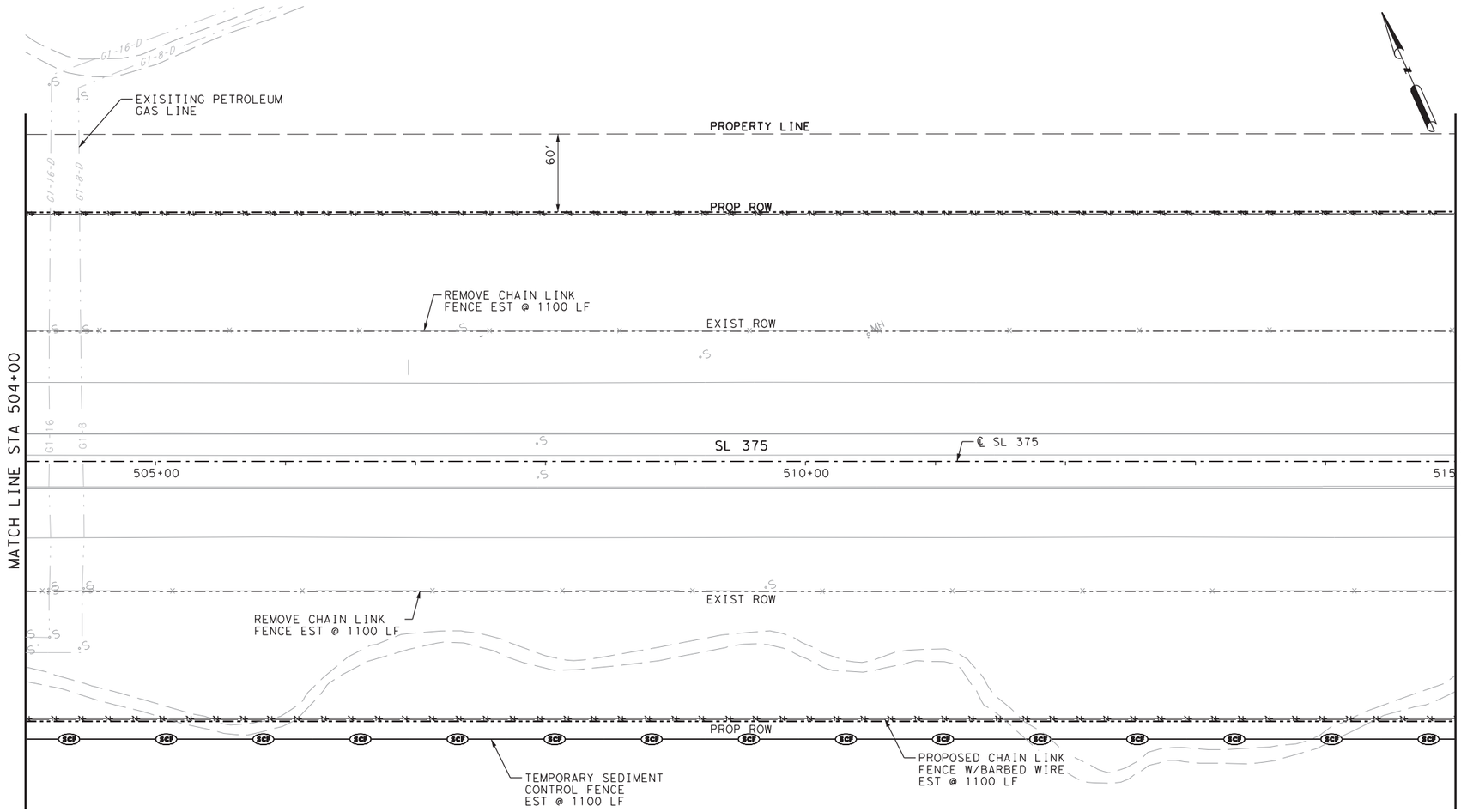
SCALE: 1" = 100' SHEET 12 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.	SHEET
6	RMC 6388-14-001	41

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

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100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1100
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1100
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2200
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STATE OF TEXAS
LIZARDO CEBALLOS
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ENGINEERING CORPORATION
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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

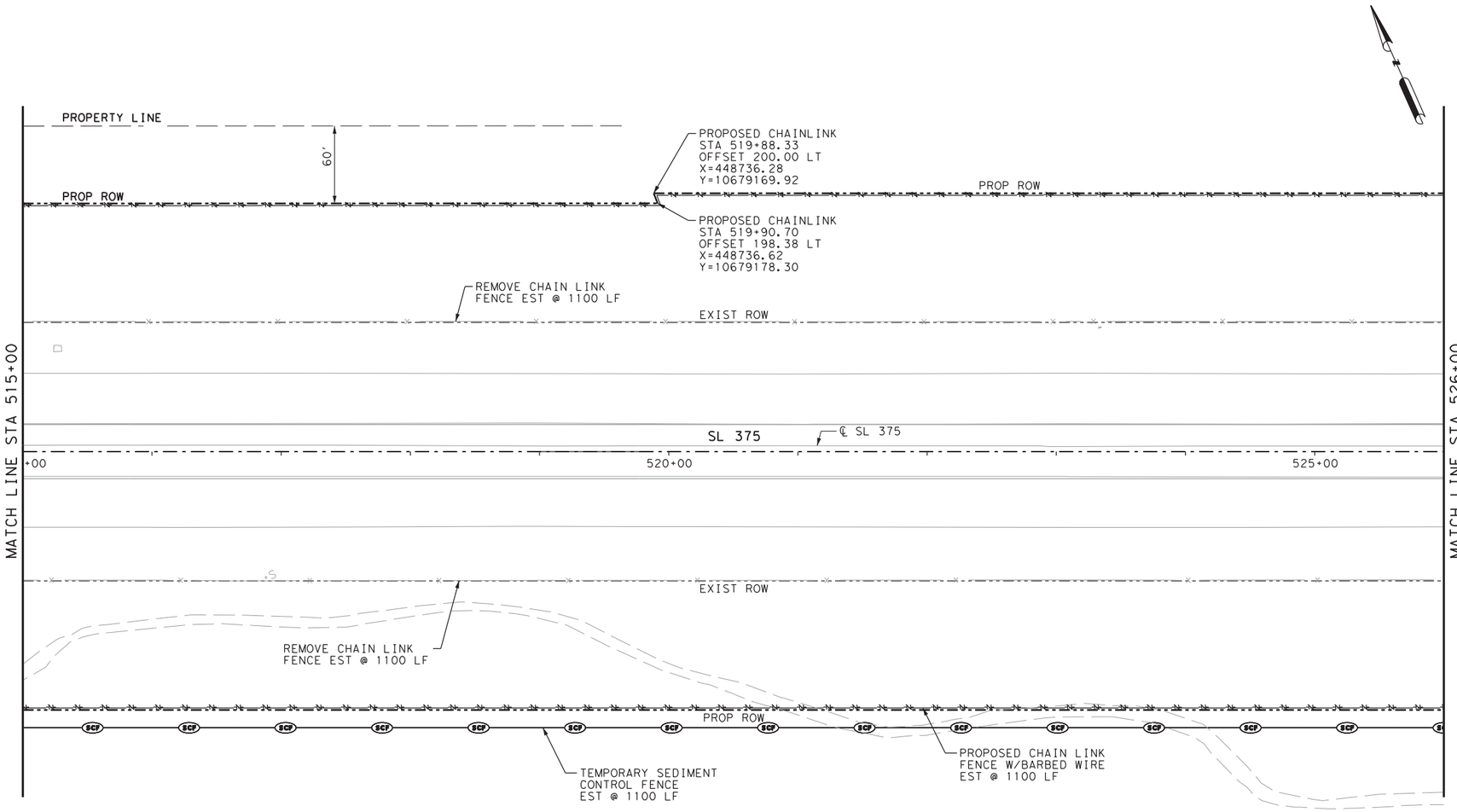
CHAIN LINK FENCE
PLAN LAYOUT
STA 504+00 TO STA 515+00

SCALE: 1" = 100' SHEET 13 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		42
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
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502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1100
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1100
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STATE OF TEXAS
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9/9/2021

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 515+00 TO STA 526+00

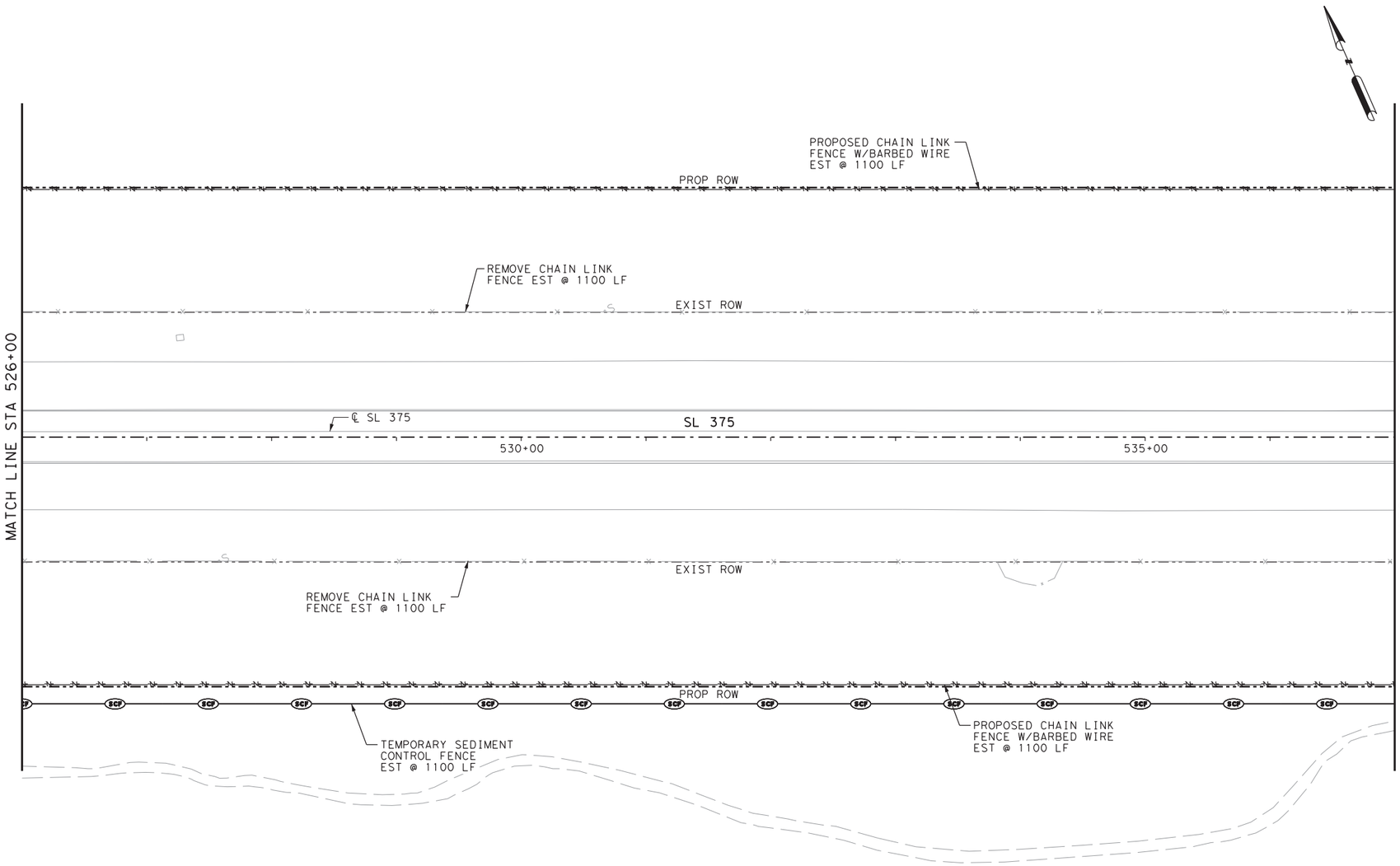
SCALE: 1" = 100' SHEET 14 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.	SHEET
6	RMC 6388-14-001	43

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

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STATE OF TEXAS
LIZARDO CEBALLOS
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9/9/2021

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 526+00 TO STA 537+00

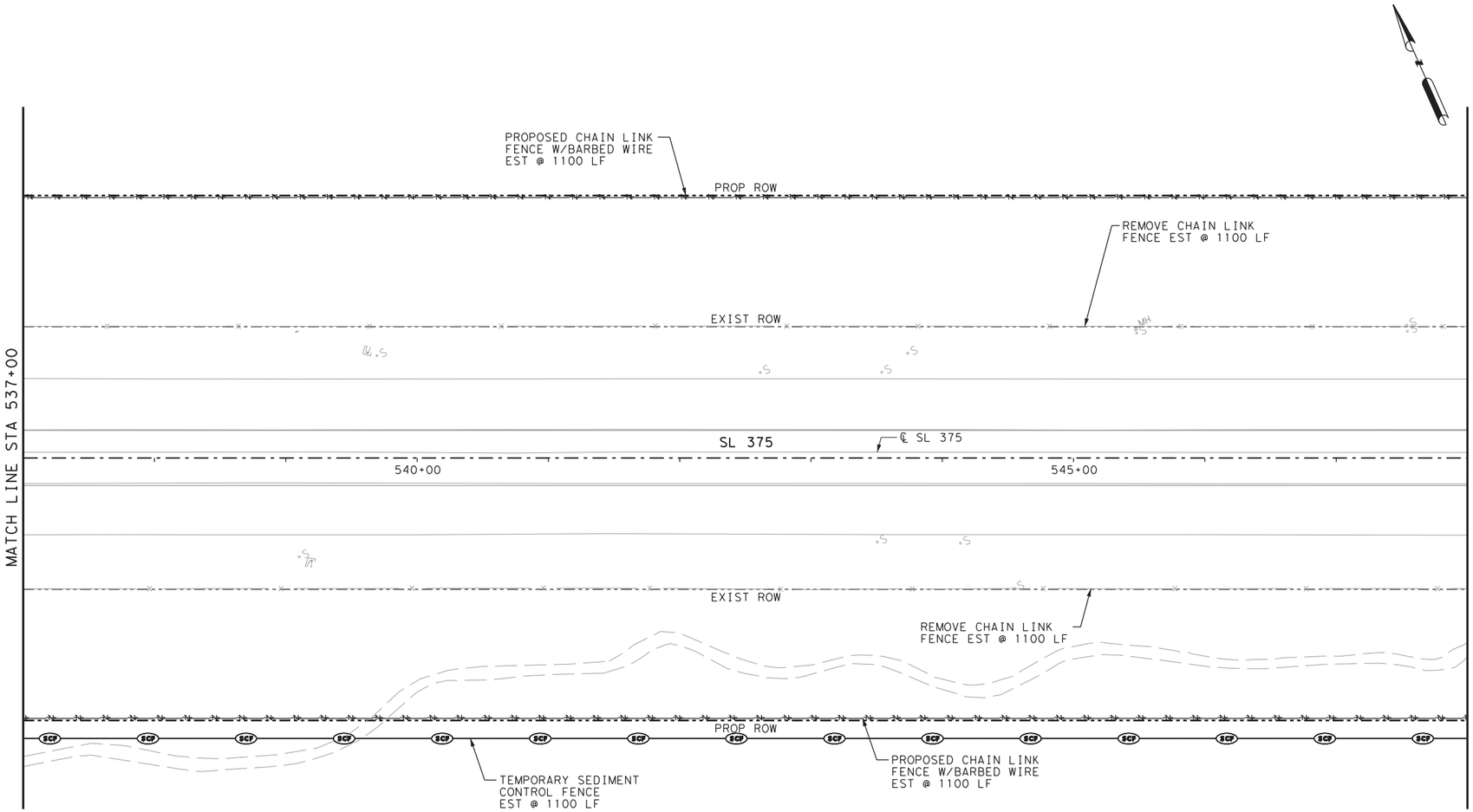
SCALE: 1" = 100' SHEET 15 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.	SHEET
6	RMC 6388-14-001	44

STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

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506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1100
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2200
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9/9/2021

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T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-9570

SL 375

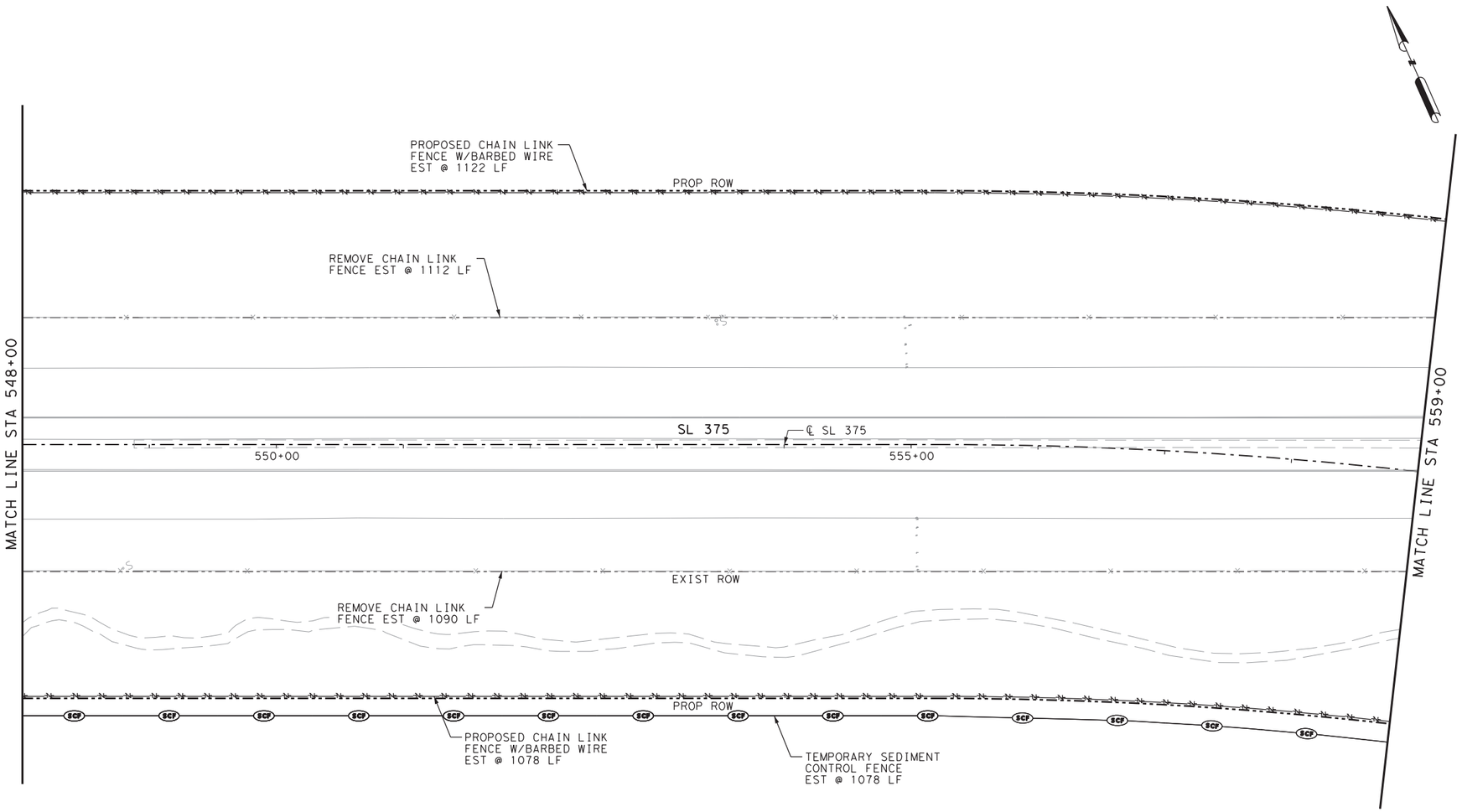
CHAIN LINK FENCE
PLAN LAYOUT
STA 537+00 TO STA 548+00

SCALE: 1" = 100' SHEET 16 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		45
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



NOTE:

1. IN THE EVENT OF DISCREPANCIES BETWEEN DETAIL SHEET SPECIFICATION ITEM 550 AND STANDARDS UFC 700, 701, 702 AND 703, THE DETAIL SHEET TAKE PRECEDENCE.
2. ITEM 550-6008 SHALL INCLUDE A 7 FOOT TALL FENCE WITH A 1 FOOT SINGLE EXTENSION ARM AND 3 STRAND BARBED WIRE FENCE ON TOP TO BE SUBSIDARY TO ITEM 550-6008. SEE DETAIL SHEET UFC 701 AND UFC 702.
3. PROPOSED CHAIN LINK FENCE TO BE PLACED ON PROPOSED ROW.
4. TXDOT TO PROVIDE CONTRACTOR WITH ROW MAP FOR STAKING PROPOSED ROW ALIGNMENT.
5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1078
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1078
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2202
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2200

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN LINK FENCE
PLAN LAYOUT
STA 548+00 TO STA 559+00

SCALE: 1" = 100' SHEET 17 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		46
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

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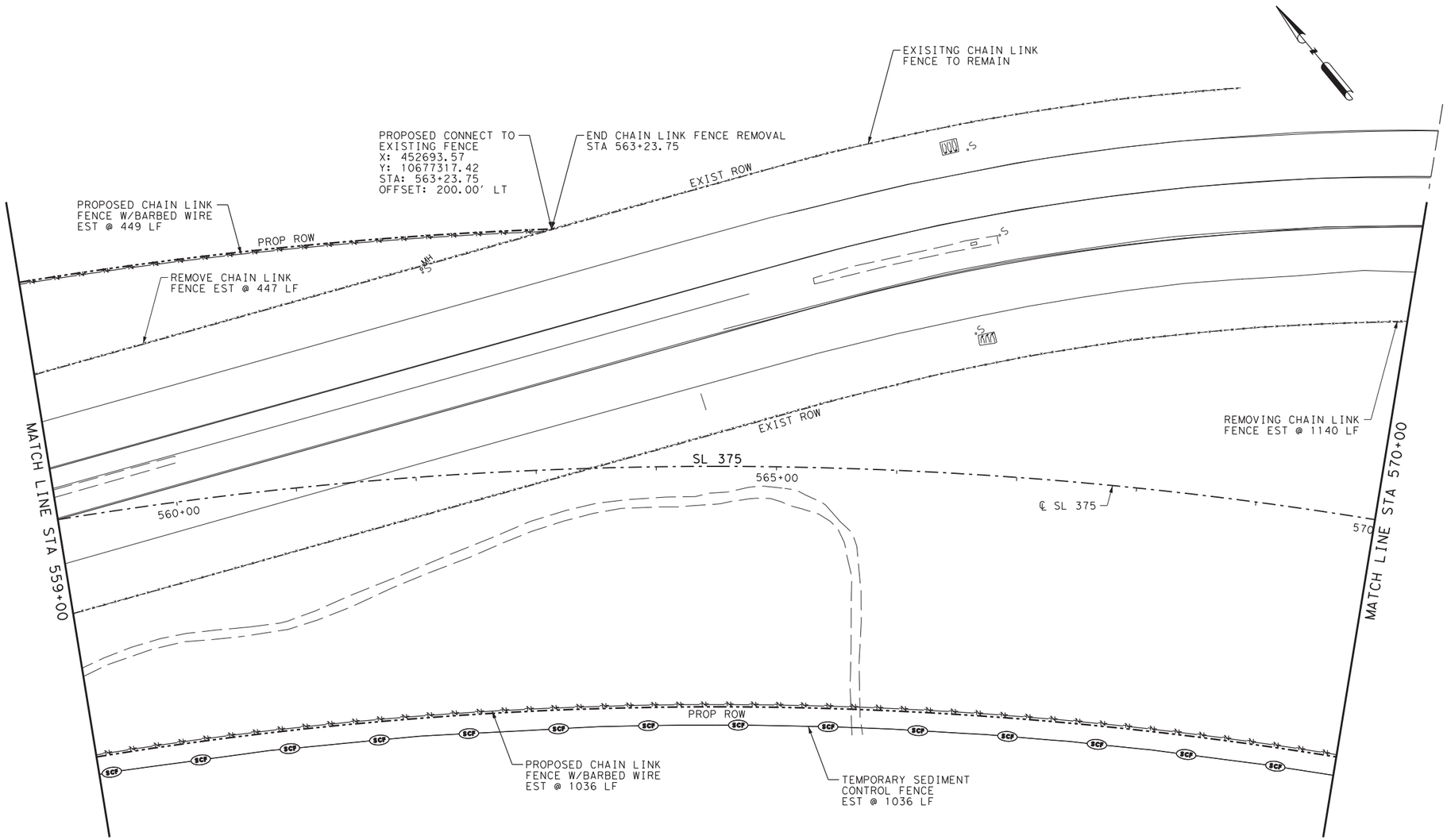
pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\4505-21\LP375\05 Design\01 DEC\03 PS&E\Chain Link Plans\02 Roadway\02 Plan Layouts\LP375_PP_17.dgn

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



NOTE:

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5. CONTRACTOR TO COORDINATE WITH PETROLEUM GAS LINE PROVIDER ON HORIZONTAL AND VERTICAL LOCATION OF PIPLINES.

QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1036
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1036
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1587
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1485

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

Lizardo Ceballos P.E.

9/9/2021

Texas Department of Transportation

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-8570

SL 375

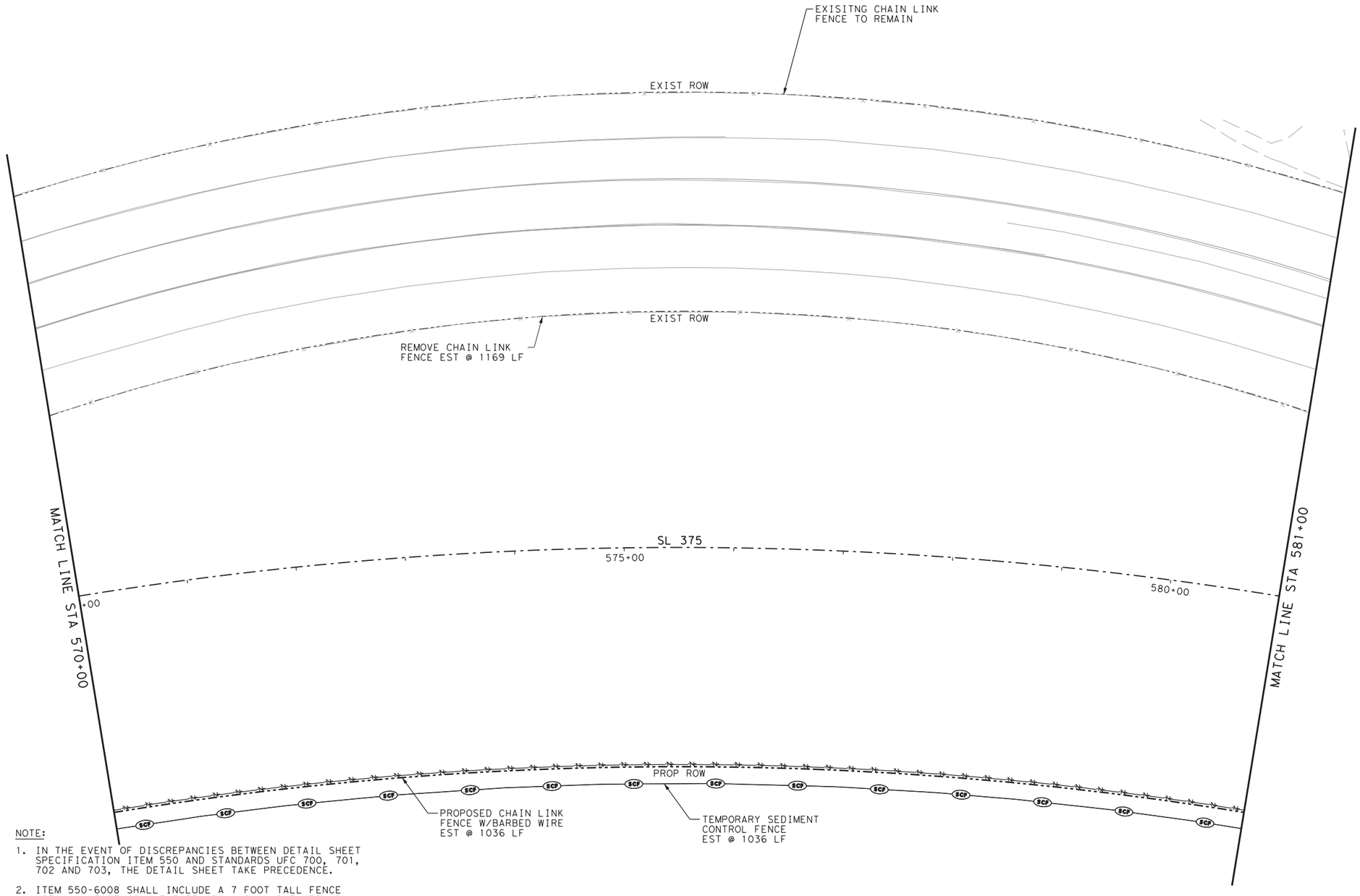
CHAIN LINK FENCE
PLAN LAYOUT
STA 559+00 TO STA 570+00

SCALE: 1" = 100' SHEET 18 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		47
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



NOTE:

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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1036
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1036
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1169
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1036

STATE OF TEXAS
LIZARDO CEBALLOS
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Lizardo Ceballos P.E.

9/9/2021

Texas Department of Transportation

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

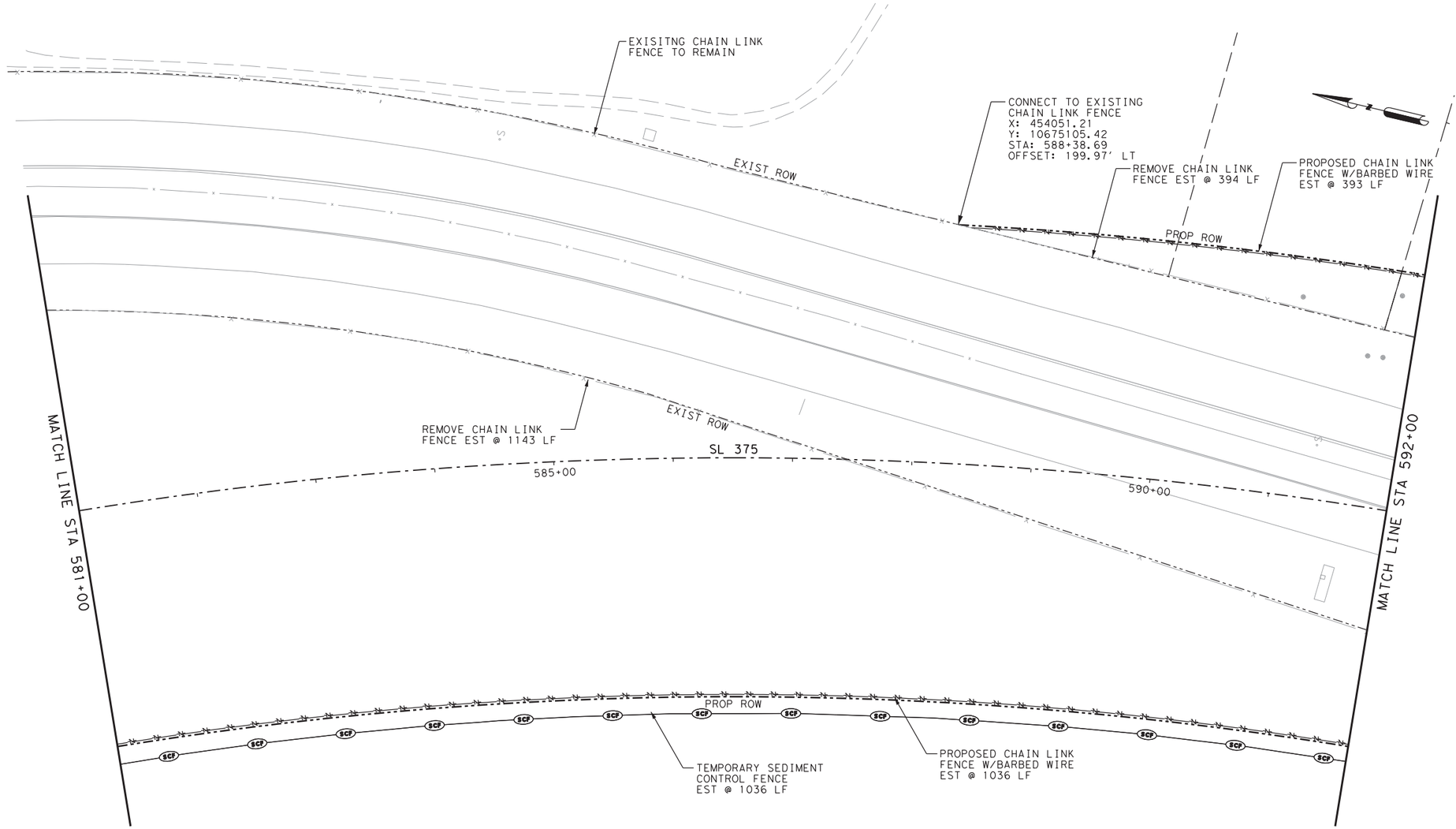
CHAIN LINK FENCE
PLAN LAYOUT
STA 570+00 TO STA 581+00

SCALE: 1" = 100' SHEET 19 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		48
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



NOTE:

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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1036
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1036
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1471
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1429

STATE OF TEXAS
LIZARDO CEBALLOS
115555
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9/9/2021

Texas Department of Transportation

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3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

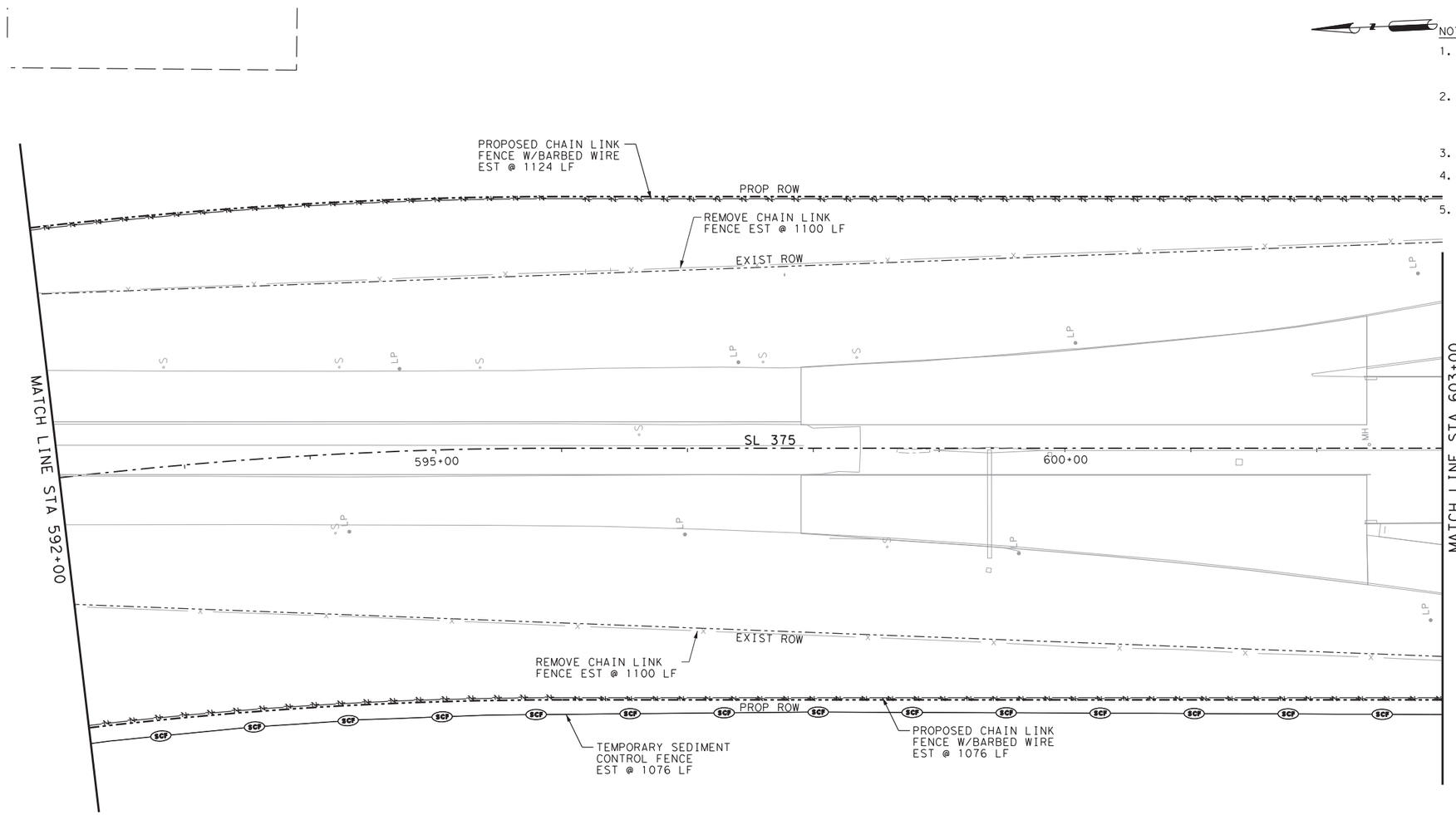
CHAIN LINK FENCE
PLAN LAYOUT
STA 581+00 TO STA 592+00

SCALE: 1" = 100' SHEET 20 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		49
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	11
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1076
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1076
550	6003	CHAIN LINK FENCE (REMOVE)	LF	2202
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	2200

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

Lizardo Ceballos P.E.

9/9/2021

Texas Department of Transportation

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375
CHAIN LINK FENCE PLAN LAYOUT STA 592+00 TO STA 603+00

SCALE: 1" = 100' SHEET 21 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		50
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375

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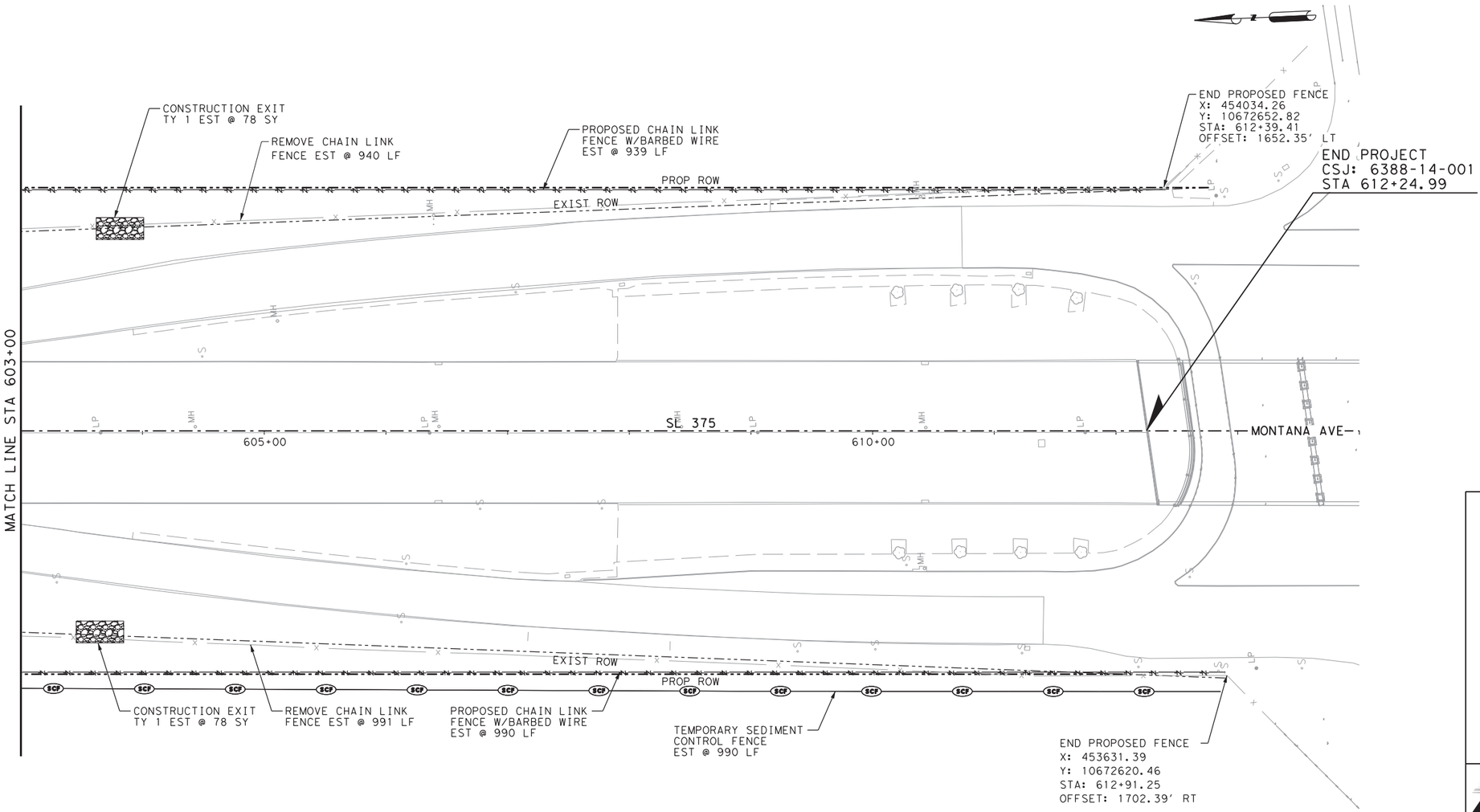
LEGEND

- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT



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QUANTITY SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	9
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	990
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	990
550	6003	CHAIN LINK FENCE (REMOVE)	LF	1931
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF	1929

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

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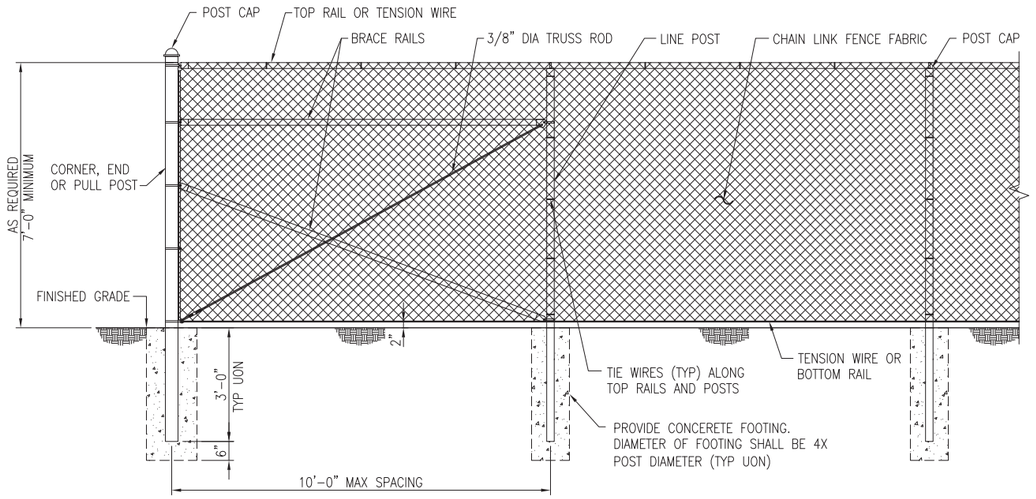
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-0570

SL 375

CHAIN FENCE PLAN LAYOUT
STA 603+00 TO END

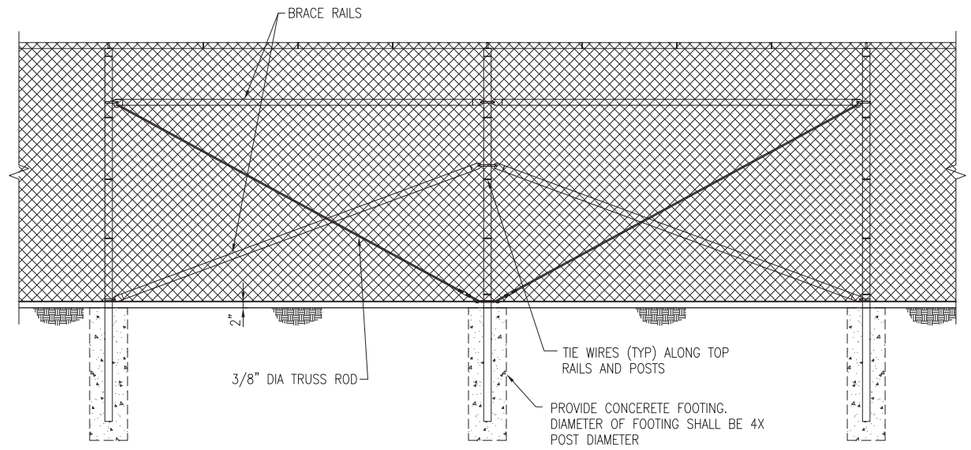
SCALE: 1" = 100' SHEET 22 OF 22

FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET
6	RMC 6388-14-001		51
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375



TYPICAL FENCE AND CORNER PANEL ELEVATION

SCALE: 1" = 1'-0"

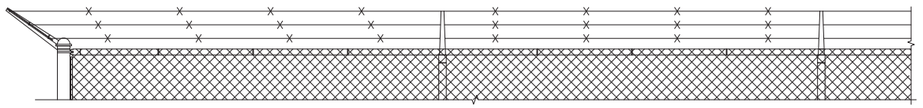


TYPICAL FENCE AND BRACED PANEL ELEVATION

SCALE: 1" = 1'-0"

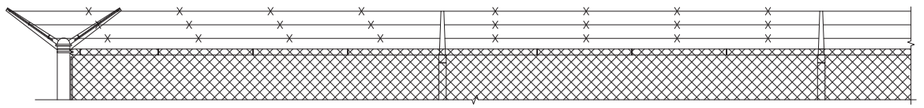
NOTE (1): A BOTTOM RAIL **WILL** BE ADDED FOR SECURITY, IT SHALL BE INSTALLED APPROX 3" ABOVE GRADE (A MINIMUM OF 2" AND A MAXIMUM OF 4"). HARDWARE SHALL BE WELDED OR SHOT NAILED TO POSTS AND RAILS IN ORDER TO SECURE IN PLACE. ATTACH FABRIC TO NEW BOTTOM RAIL TO ELIMINATE POSSIBILITY OF PEELING UP FABRIC. **BOTTOM RAIL TO BE SUBSIDIARY TO CHAIN LINK FENCE ITEM 550.**

NOTE (2): SOME LOCATIONS MAY REQUIRE 8' OF FABRIC.



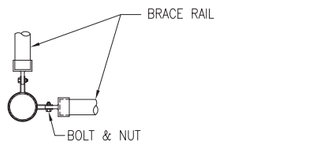
TYPICAL 3 STRAND BARBED WIRE AND SINGLE EXTENSION ARM CONFIGURATION

SCALE: 1" = 1'-0"

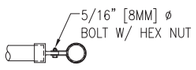


TYPICAL 6 STRAND BARBED WIRE AND DOUBLE EXTENSION ARM CONFIGURATION

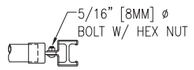
SCALE: 1" = 1'-0"



PLAN



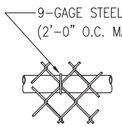
PLAN – ROUND POST



PLAN – "H" POST

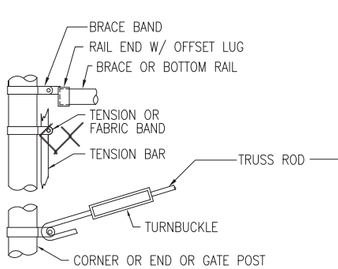
T & B SELVAGE
TWIST

PLAN – ROUND POST

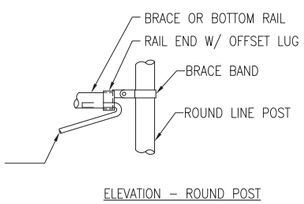


ELEVATION
TOP OR BRACE RAIL ATTACHMENT

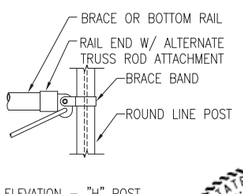
PLAN – "H" POST



ELEVATION



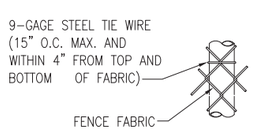
ELEVATION – ROUND POST



ELEVATION – "H" POST

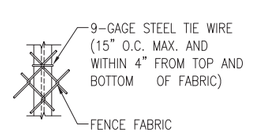
LINE POST DETAILS

SCALE: 1 1/2" = 1'-0"

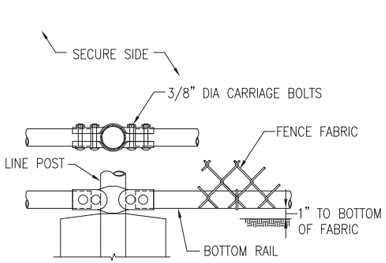


ELEVATION – ROUND POST

FITTINGS NOTES
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS. 2. ALL FITTINGS MATERIAL SHALL BE AS SPECIFIED.



ELEVATION – "H" POST



BOTTOM RAIL OPTION

CORNER OR END POSTS

SCALE: 1 1/2" = 1'-0"

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

9/9/2021

UNIFIED FACILITIES CRITERIA 4-022-03 SECURITY ENGINEERING: FENCES, GATES AND GUARD FACILITIES
DEFINITIVE DRAWINGS FOR SECURITY FENCING, GATES AND CABLING

CHAIN LINK FENCE AND DETAILS

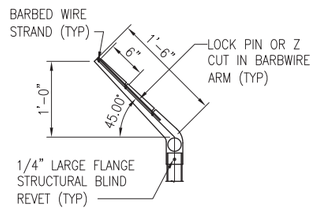
GRAPHIC SCALES

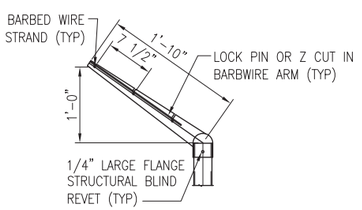
1" = 1'-0" — 0 6" 1' 2'

1 1/2" = 1'-0" — 0 4" 8" 1'-4"

UFC-700
SHEET
52

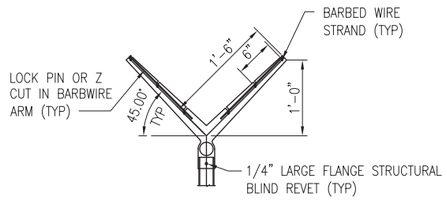
DRAWFORM REVISION: 24 AUGUST 2007





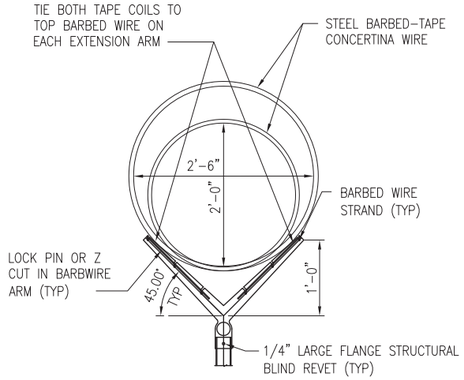
SINGLE EXTENSION ARM DETAILS

SCALE: 1" = 1'-0"



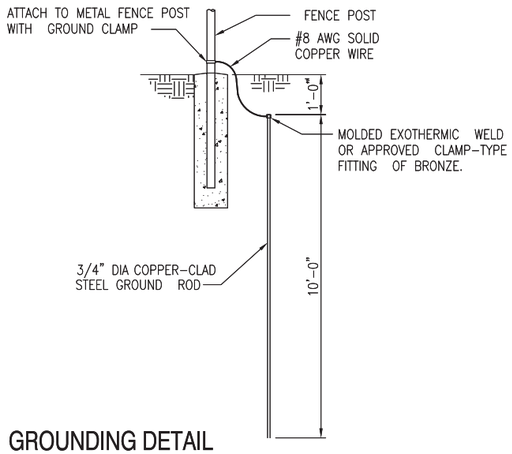
DOUBLE EXTENSION ARM DETAILS

SCALE: 1" = 1'-0"



CONCERTNA WIRE MOUNTING

SCALE: 1" = 1'-0"



GROUNDING DETAIL

NO SCALE

CHAIN LINK FENCING NOTES

1. FABRIC: THE STANDARD FENCE FABRIC SHALL BE VINYL, ZINC OR ALUMINUM-COATED STEEL WIRE CHAIN LINK WITH MESH OPENINGS NOT LARGER THAN TWO INCHES PER SIDE AND A TWISTED AND BARBED SELVAGE AT TOP AND BOTTOM IN ACCORDANCE WITH THE SPECIFICATIONS. UTILIZE 6-GAUGE FOR BASE PERIMETER OR HEIGHTENED SECURITY ZONES AND 9-GAUGE FOR BASE INTERIOR OR WHEN JOINING AN EXISTING FENCE WHICH IS ALREADY 9-GAUGE.

2. FABRIC TIES: ONLY 12-GAUGE STEEL TIES SHALL BE USED. COATING OR PLATING WILL BE ELECTROLYTICALLY COMPATIBLE WITH THE FENCE FABRIC TO INHIBIT CORROSION.

3. REINFORCEMENT: TENSION WIRES SHALL BE INSTALLED AND INTERWOVEN (OR AFFIXED WITH FABRIC TIES) ALONG THE TOP & BOTTOM OF THE FENCE FOR STABILIZATION OF THE FENCE FABRIC.

4. FENCE HEIGHT: CHAIN LINK FABRIC SHALL BE 7' HIGH WITH AN ADDITIONAL 1' IN HEIGHT COMPOSED OF 3 STRANDS OF BARBED WIRE AS REQUIRED. THE TOTAL FENCE HEIGHT SHALL BE 8'.

5. GROUND CLEARANCE: BOTTOM OF THE FENCE FABRIC SHALL BE WITHIN TWO INCHES OF FIRM SOIL.

6. TOP GUARDS: A TOP GUARD IS AN OVERHANG OF BARBED WIRED ALONG THE TOP OF A FENCE, FACING OUTWARD (AWAY FROM PROTECTED SITE) AND UPWARD AT APPROX. 45 ANGLE. TOP GUARD SUPPORTING ARMS WILL BE PERMANENTLY AFFIXED TO THE TOP OF FENCE POSTS TO INCREASE THE OVERALL HEIGHT OF THE FENCE AT LEAST 1 FOOT. THREE STRANDS OF 12-GAUGE BARBED WIRE, EQUALLY SPACED, SHALL BE INSTALLED ON THE SUPPORTING ARMS.

SHEET 55

CE POSTS: SHALL BE ASTM F1043 OR F1083 ROUND E OR SQUARE TUBE AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS. FENCE POST SPACING AND SIZE (DIAMETER) SHALL BE DETERMINED IN ACCORDANCE WITH CHAIN LINK FENCE MANUFACTURERS' INSTITUTE (WLG 2445). SPACING SHALL NOT EXCEED 10'-0" OC. SIZE (DIAMETER) SHALL NOT BE LESS THAN THAT SPECIFIED.

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED
PROFESSIONAL ENGINEER

9/9/2021

GRAPHIC SCALES

1" = 1'-0"

0 6" 1' 2'

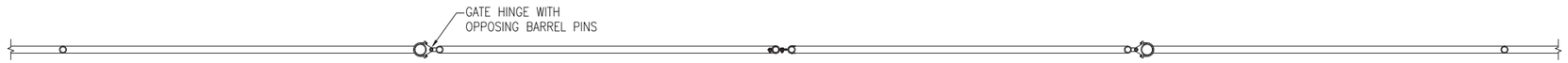
UNIFIED FACILITIES CRITERIA 4-022-03 SECURITY ENGINEERING: FENCES, GATES AND GUARD FACILITIES
DEFINITIVE DRAWINGS FOR SECURITY FENCING, GATES AND CABLING

BARBED WIRE ARRANGEMENT DETAILS

UFC-701
SHEET
53

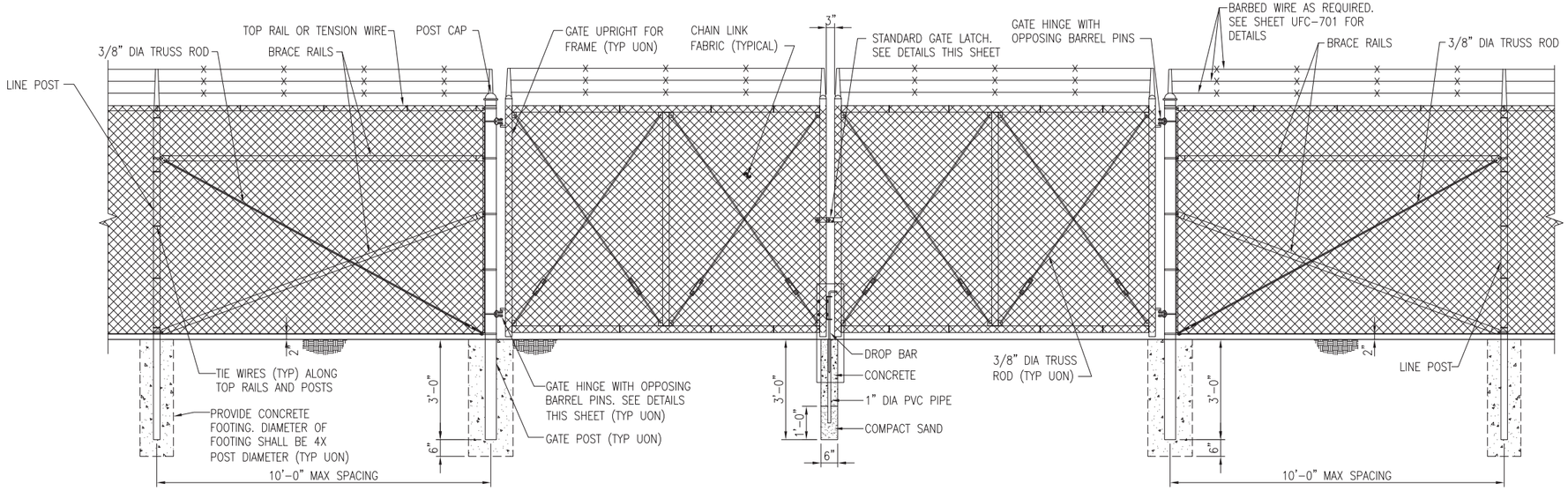
DRAWFORM REVISION: 24 AUGUST 2007

FILE NAME: J:\DICE\FENCE DRAWINGS\552005-UFC-701.dwg LAYOUT NAME: #-### PLOTTED: Monday, April 29, 2013 - 1:05pm



PLAN - DOUBLE SWING GATE

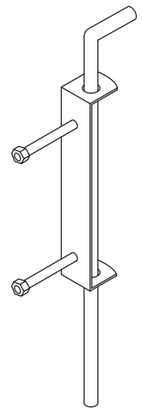
SCALE: 1" = 1'-0"



TYPICAL DOUBLE SWING GATE ELELVATION

SCALE: 1/2" = 1'-0"

NOTE: PROVIDE ONE DROP BAR FOR EACH LEAF (TYP). ASSOCIATED GALV SLEEVES TO BE INSTALLED FLUSH WILL GRADE AT FULLY OPEN AND CLOSED POSITIONS. CONTRACTOR SHALL PROVIDE 6" LAYER OF #10 STONE BELOW BOTTOM OF SLEEVE TO ALLOW FOR DRAINAGE.

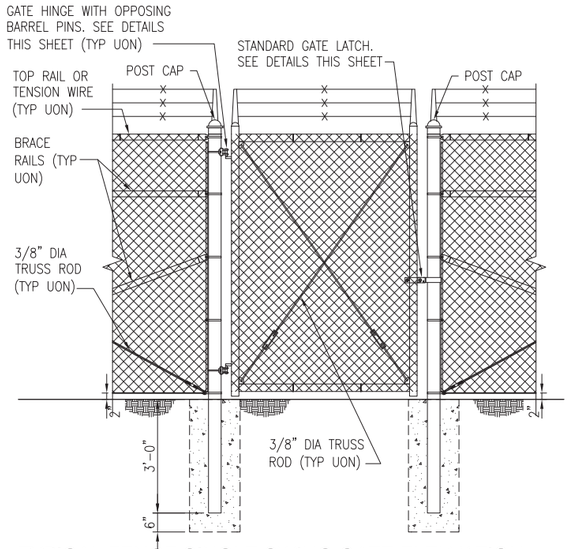


DETAIL: DROP BAR

NOT TO SCALE

PLAN SINGLE SWING GATE

SCALE: 1" = 1'-0"



TYPICAL FENCE SINGLE SWING GATE ELELVATION

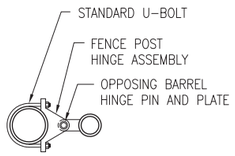
SCALE: 1/2" = 1'-0"

SINGLE OR DOUBLE LEAF GATES		
NOM HEIGHT (H)	UPRIGHT HT (U)	FRAME HT (F)
NOM HT INCLUDING BARBED WIRE	ACTUAL DIM	ACTUAL DIM
8'-0" [2438MM]	7'-10" [2388MM]	6'-8 1/2" [2045MM]

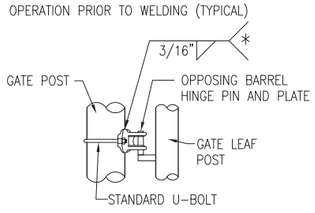
SINGLE LEAF GATES		
OPENING	GATE POSTS	HINGE SPACE (S)
FACE TO FACE	SQUARE & ROUND SIZES	POST TO UPRIGHT
3'-0" [914MM] THROUGH 6'-0" [1829MM]	2.5"[63.5MM]SQ x 3/16"TH OR 2.875" [73MM] OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4" [57MM]
6'-0" [1829MM] THROUGH 12'-0" [3657MM]	4" [102MM] SQ x 3/16"TH OR 4" [102MM] OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4" [57MM]
12'-0" [3657MM] THROUGH 19'-0" [5790MM]	6" [153MM] SQ x 3/16"TH OR 6.625" [168MM] OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4" [57MM]
19'-0" [5790MM] THROUGH 23'-0" [7010MM]	8" [203MM] SQ x 1/4"TH OR 8.625" [219MM] OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4" [57MM]

GATE POSTS & FOUNDATIONS: GATE POST SIZE AND ASSOCIATED FOOTING DIAMETER TO BE DETERMINED BY MANUFACTURER, BASED ON LEAF WEIGHT & DIMENSION, BUT NOT LESS THAN DIAMETER SHOWN ON THESE DRAWINGS. MINIMUM FOOTING DIAMETERS (TO BE FILLED W/4000 PSI CONC): 40" ø FOR 8" POST; 36" ø FOR 6" POST; 24" ø FOR 4" POST; OTHER SIZES TO BE DESIGNED BY MFR OR KTR. NO FOOTING WIDTH SHALL BE LESS THAN 4(X) THE POST WIDTH.

NOTE: IF GATE HINGES ARE NOT OPPOSING (AS SHOWN ABOVE) OR LEAF IS NOT LOCKED MECHANICALLY TO THE HINGES, WELD AN ANGLE, PLATE, OR BLOCK ABOVE HINGE TO RESTRICT LEAF FROM BEING REMOVED OR LIFTED OFF. RESTRICTION SHALL NOT HINDER OPERATION OF GATE.

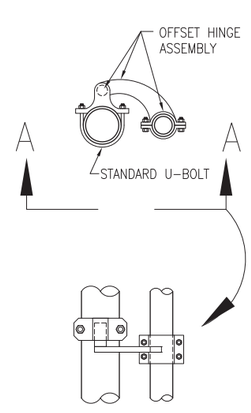


(*)NOTE: WELD HINGES TO POST IF INSTALLING CABLE REINFORCEMENT ON GATES. ENSURE CORRECT HEIGHT FOR FULL OPERATION PRIOR TO WELDING (TYPICAL)



GATE HINGE DETAIL

SCALE: 1 1/2" = 1'-0"

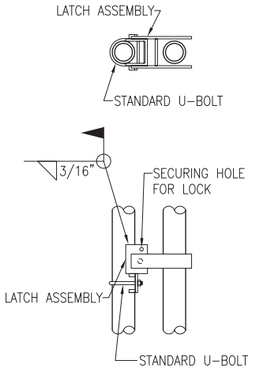


OFFSET HINGE DETAIL

SCALE: 1 1/2" = 1'-0"

GATE LATCH DETAIL

SCALE: 1 1/2" = 1'-0"



FULCRUM LATCH DETAIL

SCALE: 1 1/2" = 1'-0"

STATE OF TEXAS
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115555
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PROFESSIONAL ENGINEER

9/9/2021

GRAPHIC SCALES

1/2" = 1'-0" — 0 1' 2' 4'

1 1/2" = 1'-0" — 0 4" 8" 1'-4"

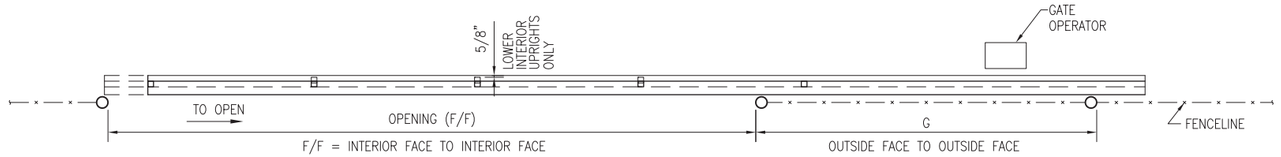
UNIFIED FACILITIES CRITERIA 4-022-03 SECURITY ENGINEERING: FENCES, GATES AND GUARD FACILITIES
DEFINITIVE DRAWINGS FOR SECURITY FENCING, GATES AND CABLING

CHAIN LINK SWING GATE AND DETAILS

UFC-702
SHEET
54

DRAWFORM REVISION: 24 AUGUST 2007

FILE NAME: J:\DICE\FENCE DRAWINGS\552005-UFC-702.dwg LAYOUT NAME: S-702 PLOTTED: Monday, April 29, 2013 - 1:07pm



GATE PLAN

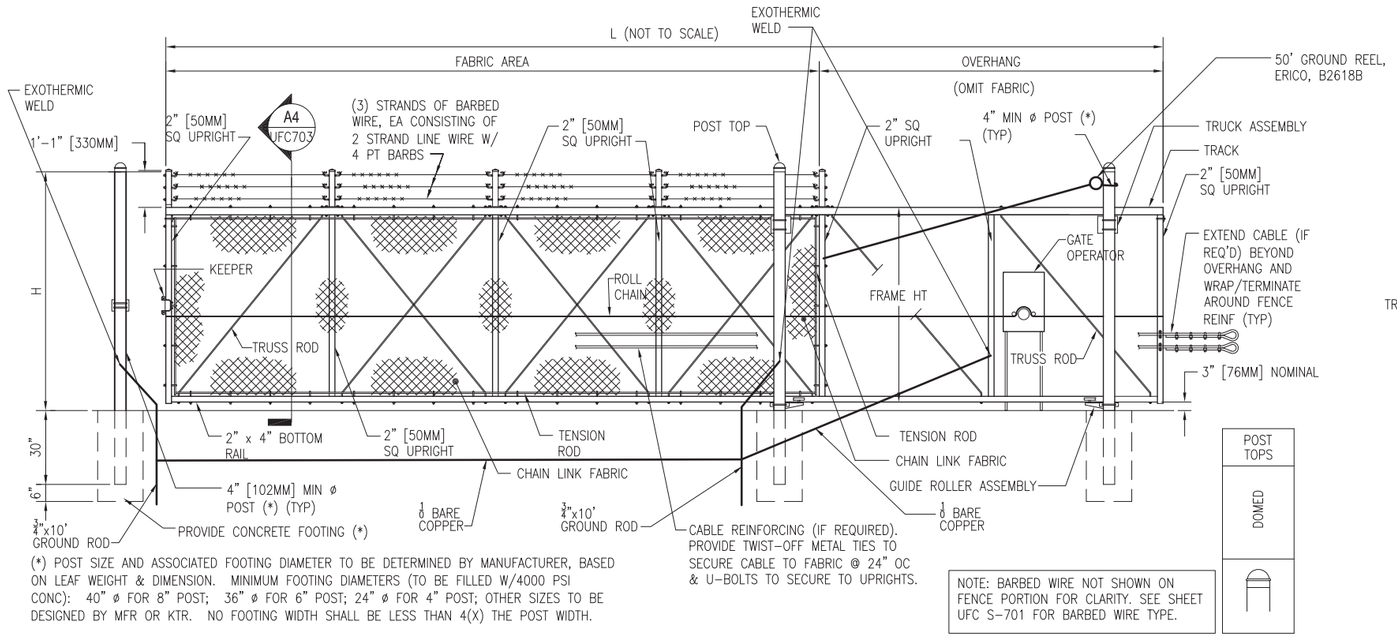
NOT TO SCALE

A1 UFC-703

C1 CIVIL DWGS | UFC-703

SAMPLING OF SIZES:

OPENING (F/F)	NOMINAL HEIGHT (H)	LENGTH (L)	GATE POSTS (G)	BAYS / OVERHANG
37'-0"	8'-0"	53'-3"	16'-0"	5 (FABRIC) / 2 (W/O)
30'-0"	8'-0"	42'-3"	12'-0"	4 (FABRIC) / 2 (W/O)
24'-0"	8'-0"	36'-3"	12'-0"	3 (FABRIC) / 2 (W/O)



(*) POST SIZE AND ASSOCIATED FOOTING DIAMETER TO BE DETERMINED BY MANUFACTURER, BASED ON LEAF WEIGHT & DIMENSION. MINIMUM FOOTING DIAMETERS (TO BE FILLED W/4000 PSI CONC): 40" ø FOR 8" POST; 36" ø FOR 6" POST; 24" ø FOR 4" POST; OTHER SIZES TO BE DESIGNED BY MFR OR KTR. NO FOOTING WIDTH SHALL BE LESS THAN 4(X) THE POST WIDTH.

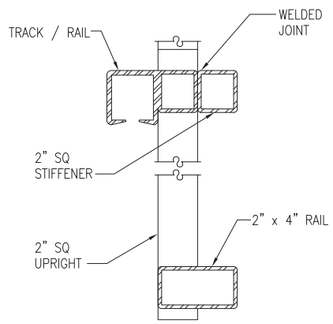
NOTE: BARBED WIRE NOT SHOWN ON FENCE PORTION FOR CLARITY. SEE SHEET UFC S-701 FOR BARBED WIRE TYPE.

TYPICAL SINGLE CANTILEVERED SLIDING GATE ELEVATION- (4) BAYS SHOWN

NOT TO SCALE

WITH ROUND POSTS & WITH BARBED WIRE

A1 UFC-703 | UFC-703



SECTION (TYP)

NOT TO SCALE

A4 UFC-703 | UFC-703

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER
9/9/2021

UNIFIED FACILITIES CRITERIA 4-022-03 SECURITY ENGINEERING: FENCES, GATES AND GUARD FACILITIES
DEFINITIVE DRAWINGS FOR SECURITY FENCING, GATES AND CABLING

CHAIN LINK CANTILEVERED GATE DETAILS

UFC-703
SHEET
55

DRAWFORM REVISION: 24 AUGUST 2007

FILE NAME: J:\CICE\FENCE DRAWINGS\552005-UFC-703.dwg LAYOUT NAME: Layout1 PLOTTED: Monday, April 29, 2013 - 1:09pm

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 1122.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the Storm Water Pollution Prevention Plan (SW3P) and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA) or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, Contractor shall submit Notice of Intent (NOI) to TCEQ and the Engineer.
5. NOI required: ☒Yes ☐No

Note: If amount of soil disturbance changes, permit requirements may change.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

The Contractor shall adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required
☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required
☐ Nationwide Permit 14 - PCN Required
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1.

2.

NONE

3.

4.

401 Best Management Practices: (Not applicable if no USACE permit)

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☐ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Sedimentation Chambers

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☐ No Action Required ☒ Required Action

Action No.

1. No work or ground-disturbing activities would take place outside of the archaeological APE, including the existing easement areas along the corridor outside of the existing and proposed ROW, as well as tie-in areas at existing roadways and driveways.

2. During construction, if inadvertent discoveries of Native American huan remains or cultural items are discovered, activity in the area of discovery would cease and notice would be provided to TxDOT, per the Native American Graves Protection and Repatriation Act. The activity may resume after 30 days following certification of notice to TxDOT.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.

☐ No Action Required ☒ Required Action

Action No.

1. Proposed project impact would exceed impact threshold idicated in the Threshold Programmatic Agreement between TxDOT and TPWD for Warm Desert Dunes Vegetation.

2. Minimize disturbance to existing native vegitation throughout the project limits.

3. In accordance with the Executive Order (EO) 13112 on Invasive Species, seeding and replanting with TxDOT approved seeding specifications would be performed where possible

4. Landscape added to sections of the project

5. To reduce the spread of African Rue, herbicide will be sprayed during ROW prep and as needed once construction starts. After construction is finished they will spray 3 times a year, as needed, as well as implement mechanical treatments in the early spring.

6. Retention ponds will be lined with rock walls and be lined with earthen bottoms to prevent African Rue seeds from flying into pond area.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☐ No Action Required ☒ Required Action

Action No.

Bird BMP's will be in place to further reduce the potential impact on the Western Burrowing Owl.
These BMP's include:

A. Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.

B. Do not disturb, destroy, or remove active nests, including ground-nesting birds, during the nesting season.

C. Avoid the removal of unoccupied, inactive nests, as practicable.

D. Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.

E. Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

2. Migratory birds:

In the event that migratory birds are encountered onsite during project construction, every effort would be made to avoid protected birds, active nest, eggs, and/or young

A. If active migratory bird nests are discovered on a project site, the contractor would immediately stop work within 50 feet of the nest(s) or bird(s) and notify the TxDOT El Paso District's Environmental Coordinator. TxDOT would determine how long the nest(s) would need to be avoided, or if a permit to remove or relocate the nest is an option.

B. Avoid disturbing, destroying, or removing active bird nest, including ground nesting birds, during the nesting season. Avoid the removal of unoccupied, inactive nest, as practicable. Prevent the establishment of active nest during the nesting seasons on TxDOT owened and Operated facilities and structures proposed for replacement or repair. Do not collect, capture, relocate, or transport birds, eggs, young, or active nest without a permit.

3. Texas Horned Lizard: Terrestrial Reptile BMPs (listed below) and contractors will be aware of the potential occurance of the species within the project area and will avoid harvester ant mounds in the section of Project Specific Locations (PSLs),

A. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegitation of the disturbed areas where feasible. If hydromulching and/or hydroseeding are not feassible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is perferred. Plastic Netting should be avoided to the extent practicable.

B. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling

C. Inform contractors that if reptiles are found on project site allow species leave the project area

D. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.

E. Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

4. Bat BMP's will be in place to further reduce the potential impact on the Western Small-footed Bat and Cave Myotis Bat.

These BMP's include:
To determine the appropriate best management practice to avoid or minimize impacts to bats, review the habitat description for the species of the intrest on the TPWD Rare, Threatend, and Endangered Species of Texas by County List or other trusted resources. All bat surveys and other activities that include direct contact with bats shall comply with TPWD-recommended white-nose syndrome protocols located on the TPWD Wildlife Habitat Assessment Program website under "Project Design and Construction". The folowing survey and exclusion protocols Should be followed Prior to commencment of construction activities. For the purposes of this document, structures are defined as bridges, culverts (concrete or metal), wells and buildings.

A. For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.

B. For roost where occupancy is strongly suspected but unconfirmed during the intial survey, revist feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats

Texas Department of Transportation

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: TxDOT	DW: BW	CK: JAB
©TxDOT February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	6388	14	001	SL 375
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		56

C. If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.

D. If feature(s) used by bats are removed as a results of construction, replacements should incorporate bat-freindly design or artificial roosts should be constructed to replace these features, as practicable,

E. Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible.

F. Avoid unnecessary removal of dead fronds on native and oramental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kleberg, Nueces, and San Patricio counties) from April 1 through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warms periods(nightime temptures 55°F for at least two consecutive nights), so bats can move away from the disturbances and find new roosts.

E. Exclusion devices can be installed by a Qualified individual between September 1 and March 31 Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime tempatures are above 70°F. Prior to exclusion. ensure that alternate roosting habitat is avaible in the immediate area. If no suitable roosting habitat is avaible, installation of alternate roost is recommended to replace the loss an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area. See Section 2: Standard Recommendations for acceptable methods for excluding bats from structures.

F. Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupancy these features. Post occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.

G. Retain mature, large diameter hardwood forest species and native/ ornamental palm trees where feasible

H. In all instances avoid harm or death to bats. Bats should only be

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the Engineer immediately.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropiate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the follwing are detected:

* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Does the project involve the demolition of a span bridge?

☐ Yes ☒ No (No further action required)

If "Yes", a pre-demolition notification must be submitted to the Texas Department of State Health Services, 20 calendar days prior to the demolition of the bridges(s) on the project. Contact TxDOT's hazardous material Coordinator at 210-615-6486 for assisstance with the notification.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☐ No Action Required ☒ Required Action

Action No.

1. The contractor will make every resonable effort to minimize construction noise through abatement measure such as proper maintence of muffler systems

2. The contractor will take appropriate measure to prevent, minimize, and control the spills of the hazardous materials in the construction staging area,

3. The contractor will minimize fugitive dust and emissions during construction through site emissions during construction through site watering, emission control devices, and limiting unnecessary idling of construction vehicles.

Texas Department of Transportation

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: TxDOT	DW: BW	CK: JAB			
© TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY			
REVISIONS	6388	14	001	SL 375			
	DIST	COUNTY		SHEET NO.			
	ELP	EL PASO		57			

STORM WATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TPDES General Permit TXR150000. The operator, The Texas Department of Transportation ensures that: Project specifications provide that adequate BMPs have been developed for this project. The contractor shall be the party responsible for implementing the BMPs described herein. The contractor shall implement changes approved by the Project Engineer to the SWP3 within the times specified in the SWP3 or the TPDES General Permit. Operators affected by modifications to specifications will be notified in a timely manner.

1. SITE OR PROJECT DESCRIPTION:

NATURE OF THE CONSTRUCTION ACTIVITY: SEE TITLE SHEET

POTENTIAL POLLUTANTS AND SOURCES:

Sediment laden storm water	*Storm water conveyance over disturbed areas*
Fuels, oils, and lubricants	*Construction vehicles and storage areas*
Construction debris and waste	*Various construction activities*
Sanitary waste	*Restroom facilities*
Trash	*Construction site and Receptacles*

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

1. *Prep existing ROW, including windrowing existing grass sod and mulch, excavation and embankment.*
2. *Prep ROW for new chain link fence, including windrowing existing grass sod and mulch.*
3. *Prepare path for new fence, blading, and grading*
4. *Install chain link fence*
5. *Final grading and remove exisiting fence*
6. *Remove traffic devices and clean up project.*
7.

AREAS:

TOTAL AREA OF PROJECT: 277.421ACRES

TOTAL AREA OF SOIL DISTURBANCE: 10.06ACRES

TOTAL AREA OFF-SITE: N/A

WEIGHTED RUNOFF COEFFICIENT (BEFORE AND AFTER CONSTRUCTION): .90

DATA DESCRIBING THE SOIL: *Existing soils consist primarily of these soil types: windblown sand deposits underlined by young quaternary deposits from the Holocene period. Hueco soils, and Winks soils.*

GENERAL LOCATION MAP: SEE TITLE SHEET

DETAILED SITE MAP: SEE SW3P SITE PLAN SHEET 1606-1653.

THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:
Supporting Concrete Plant Facilities shall be located off site.

NAME OF RECEIVING WATERS: *A classified stream does not pass through the project. The Rio Grande River will recieve discharges from the disturbed areas.*

A COPY OF TPDES CGP TXR150000 IS INCLUDED IN THE SWP3 FILE.

REMARKS: *See SWP3 Notebook for environmental, archeological, and historical documentation.*

401 WATER QUALITY CERTIFICATION: YES____ NO__X__

2. BEST MANAGEMENT PRACTICES (BMPs):

EROSION AND SEDIMENT CONTROLS: Erosion and sediment controls have been designed to retain sediment on-site. Controls shall be utilized to reduce off site transport of suspended sediments and pollutants if it is necessary to pump water from the site. Control measures shall be installed per specifications or as directed. Sediment must be removed from controls per the plan requirements or manufacturers recommendations, but no later than the time that design capacity has been reduced by 50%. If sediment escapes the site, accumulations will be removed to minimize further negative effects. Controls will be developed to limit the off site transportation of litter, construction debris, and construction materials.

INTERIM(INT), PERMANENT(PER), AND 401 CERTIFICATION BMP'S:

EROSION CONTROLS:	401	INT	PER
☒ *Compaction & Tracking of slopes*		X	
☐ *Diversion Dike*			
☒ *Preserve Existing Vegetation*			X
☐ *Soil Stabilization*			
☐ *Permanent Vegetation*			
☐ *No Erosion Controls are Required.*			

SEDIMENT CONTROLS:	401	INT	PER
☒ *Silt Fence*		X	
☐ *Rock Berm*			
☐ *Buffer Zones*			
☐ *Vegetative Filter Strips*			
☐ *Ditch Block*			
☐ *No Sediment Controls are Required.*			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

- ☐ *Vegetation Lined Drainage Ditch*
- ☐ *Retention/Irrigation*
- ☐ *Erosion Control Compost*
- ☐ *Grassy Swales*
- ☐ *Vegetative Filter Strips*
- ☒ *No Post Construction TSS Control Required.*

SEQUENCE OR SCHEDULE OF IMPLEMENTATION:

1. *Install silt fences.*
2. *Grade path for fence*
3. *Maintain silt fences.*
4.
5.
6.
7.

The El Paso District of the Texas Department of Transportation uses Site-Manager, a computer based construction record-keeping system. Documentation describing major grading activities, temporary or permanent cessation of construction, and stabilization measures is a part of this system and is incorporated by reference into this SWPPP.

Stabilization measures must be initiated within 14 days when practicable in portions of the site where construction has temporarily or permanently ceased, if earth disturbing activities will not be resumed within 21 days.

3. STRUCTURAL CONTROL PRACTICES:

Structural control practices for this project are listed elsewhere herein.

4. PERMANENT STORM WATER CONTROLS:

Structural control practices installed during construction will be maintained and inspected after construction has ceased on the site and until final stabilization is attained. Unless specified in the plans, after project acceptance TxDOT will assume maintenance responsibilities for the controls and measures. Other permanent controls include existing and proposed; riprap at culvert inlets and outlets, diversion dikes, swales, retaining walls, and other similar devices.

5. OTHER CONTROLS:

OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST: The off site vehicle tracking of sediments shall be minimized by removal of excess dirt from the road and at entrances to the work site. The generation of dust will be minimized as directed by the Project Engineer by dampening haul roads and covering haul trucks with a tarpaulin.

CONSTRUCTION AND WASTE MATERIALS: The contractor will maintain a clean, orderly construction site. Construction waste including trash, rubble, scrap and vegetation shall be disposed of in lidded dumpsters or in a manner approved by the Project Engineer. Disposal methods must meet Federal, State, and Local waste management guidelines. No construction waste will be buried or burned on site. Spoils disposal, material storage, and materials resulting from the destruction of existing roads and structures shall be stored in areas designated by the Project Engineer and protected from run-off. All waterways shall be cleared of temporary embankment, temporary bridges, matting, false work, piling, debris, or other obstructions placed during construction operations, that are not part of the finished work, as soon as practicable. All excess soil generated by the construction will be collected and disposed of by the contractor. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body, or stream bed.

POLLUTANT SOURCES FROM AREAS OTHER THAN CONSTRUCTION: Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants. If potential pollutant sources are identified after the start of construction, controls and measures shall be implemented as directed by the Project Engineer.

5. OTHER CONTROLS (CONT):

DEDICATED ASPHALT PLANTS: Asphalt or asphaltic material for this project will be produced off site. If the project requires a dedicated asphalt plant and the plant within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer.

DEDICATED CONCRETE PLANTS: Cement or Concrete material for this project will be produced off site. If the project requires a dedicated concrete plant and the plant is within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer. Concrete trucks shall be wasted or washed out in locations designated by the Project Engineer. The locations shall be protected by a berm sufficient to contain all waste and wash water. Wash water shall not be allowed to enter any storm drainage system or waterway. The residual material and contaminated soil shall be collected and disposed of in accordance with Federal, State, and Local guidelines. Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants.

HAZARDOUS MATERIALS AND SPILL REPORTING: The contractor shall take appropriate measures to prevent, minimize, and control the spillage or leakage of hazardous materials and any associated wastes on site and in maintenance and staging areas. hazardous materials shall include but are not limited to paints, acids, solvents, asphalt products, chemical additives, curing compounds, oils, fuels, and lubricants. Hazardous materials shall not be stored, accumulated, or transported in open containers subject to precipitation or spillage, but shall be stored, accumulated, or transported in closed containers of the type recommended by the manufacturer. In the event of a spill the Project Engineer should be contacted immediately. All spills shall be immediately cleaned and any contaminated soil removed and disposed of in accordance with Local, State, and Federal laws. Fuel tanks shall be protected by a secondary containment, such as a lined berm, capable of containing 1.5 times the capacity of the tank, or as approved by the Project Engineer.

OFF SITE PSLs: All off site project specific locations including dedicated asphalt plants, concrete plants, or utility installations, required by the contractor, are the contractor's responsibility. The contractor shall secure all permits required by local, state, or federal laws for off site PSLs. The contractor shall provide diagrams and areas of disturbance for all PSL's within 1 mile of the project.

SANITARY FACILITIES: All sanitary or septic wastes that are generated onsite shall be treated and disposed of in accordance with state and local regulations. Raw sewage or septage shall not be discharged or buried on site. Precaution shall be taken to prevent illicit discharges to storm water. Licensed waste management contractors shall be required to dispose of sanitary waste. Porta johns will be required for the construction site or as directed by the Project Engineer.

VELOCITY DISSIPATION DEVICES: Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as shown in the plans or as directed by the Project Engineer to provide a non-erosive flow velocity from the structure to a watercourse so that the natural physical and biological characteristics and functions are maintained and protected.

6. APPROVED STATE AND LOCAL PLANS:

This SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or permits approved by federal, state, or local officials.

7. MAINTENANCE:

Control measures shall be properly installed according to specifications. If inspections or other information indicates a control has been installed, used, or is performing inadequately, the contractor must replace or modify the control as soon as practicable after discovery. Control measures shall be maintained in effective operating condition. If inspections determine that BMPs are not operating effectively maintenance will be performed as necessary to continue the effectiveness of the controls. Maintenance must be accomplished as soon as practicable. Controls adjacent to creeks, culverts, bridges, and water crossings shall have priority. Controls that have been disabled, run over, removed, or otherwise rendered ineffective must be corrected immediately upon discovery.

8. INSPECTION OF CONTROLS:

A TxDOT inspector will inspect disturbed areas of the site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion controls measures identified in the SWP3 will be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site will be inspected for evidence of off-site vehicle tracking. Inspections will be conducted every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. The SWP3 will be modified based on the result of these inspections. Revisions will be completed within 7 Calendar days following the inspection. Revised implementation schedules will be described in the SWP3 and implemented as soon as practicable. Rain gages will be maintained on site for the duration of the project. Reports summarizing the scope of the inspections are included in the SWP3 file.

9. NON-STORM WATER COMPONENTS:

The contractor shall be required to implement appropriate pollution prevention controls and measures for all eligible non-storm water components of the discharge as approved and directed by the Project Engineer.

STATE OF TEXAS
LIZARDO CEBALLOS
115555
LICENSED PROFESSIONAL ENGINEER

9/9/2021

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation
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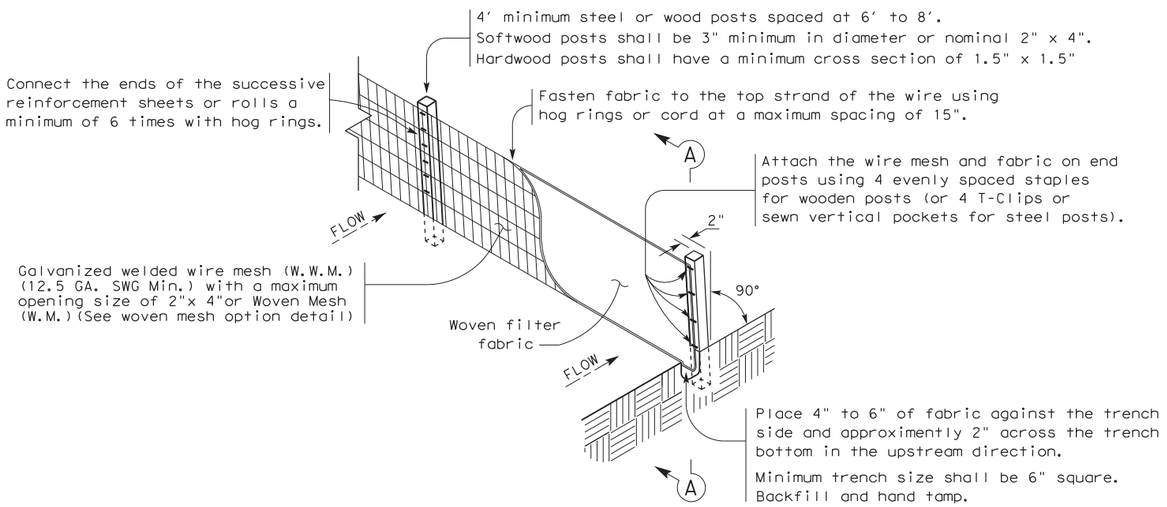
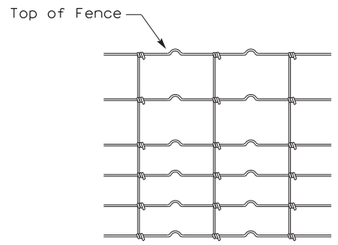
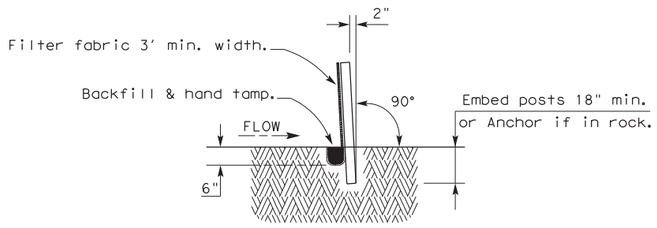
FED.RD. DIV.NO.	MAINTENANCE PROJECT NO.		SHEET NO.
6	RMC 6388-14-001		58
STATE	STATE DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
6388	14	001	SL 375



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

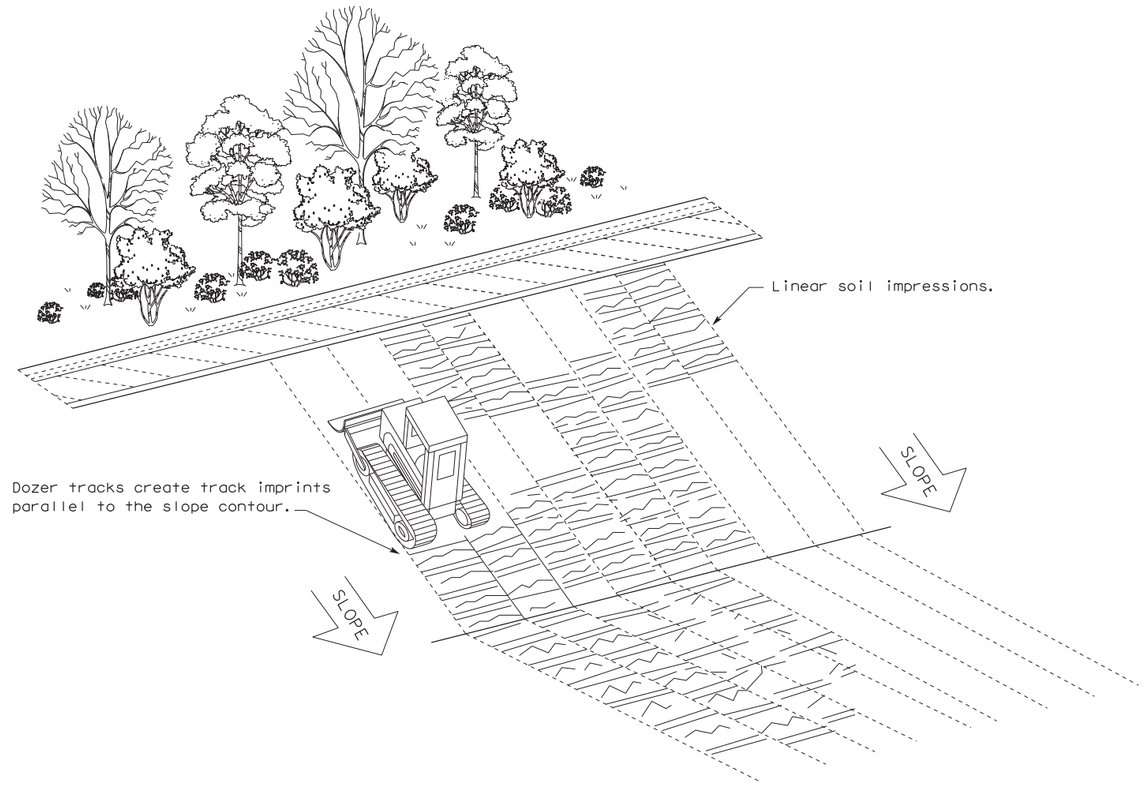
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
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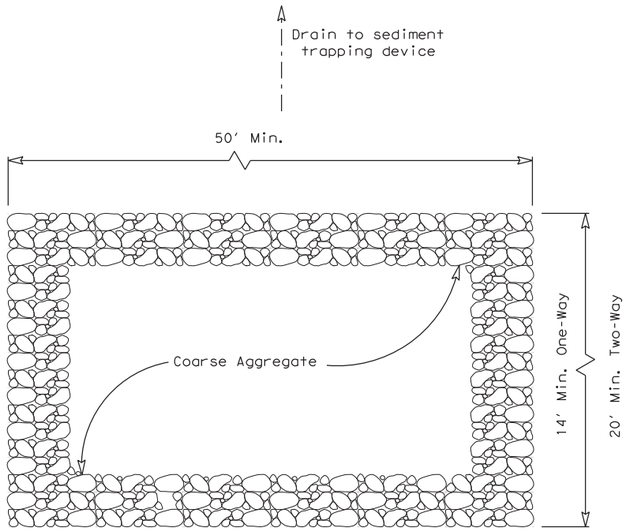
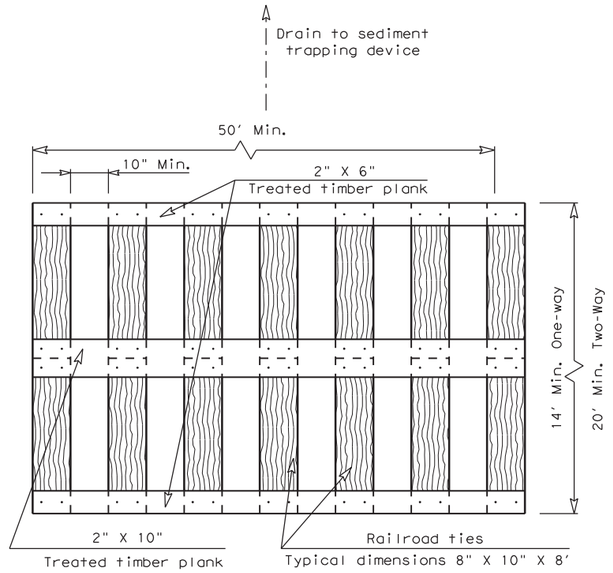


PLAN VIEW



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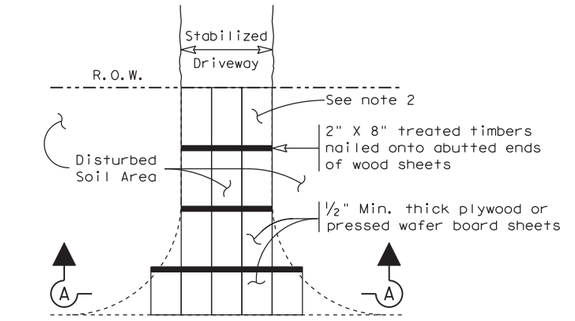

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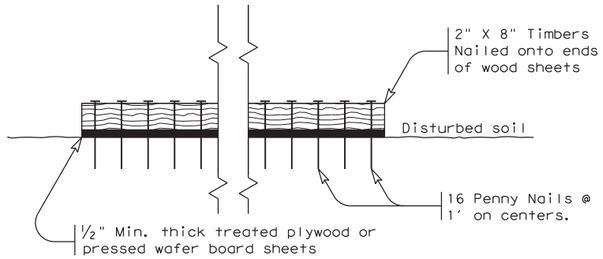
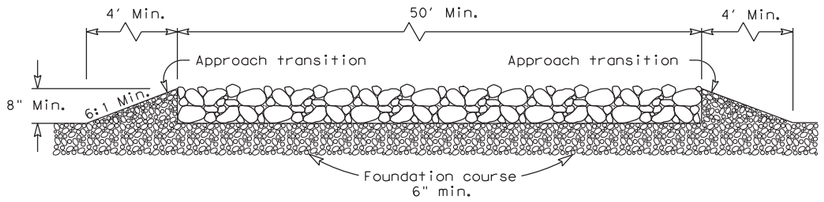


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

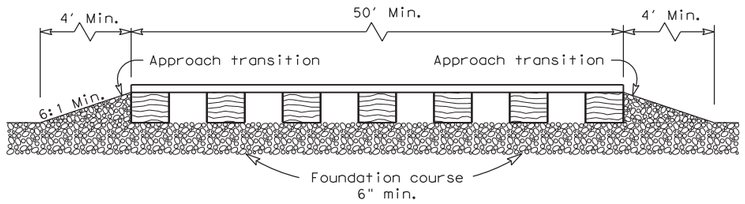
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50′.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50′.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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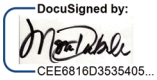
Monica Dubrule Monica.Dubrule@txdot.gov Contract Specialist TxDOT Security Level: Email, Account Authentication (None)	DocuSigned by:  CEE6816D3535405... Signature Adoption: Uploaded Signature Image Using IP Address: 204.64.21.250	Sent: 9/10/2021 4:04:55 PM Viewed: 9/10/2021 4:29:58 PM Signed: 9/10/2021 4:30:40 PM
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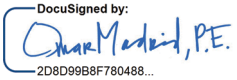
Omar Madrid Omar.Madrid@txdot.gov Director of Maintenance TxDOT Security Level: Email, Account Authentication (None)	DocuSigned by:  2D8D99B8F780488... Signature Adoption: Uploaded Signature Image Using IP Address: 204.64.21.250	Sent: 9/10/2021 4:04:55 PM Viewed: 9/10/2021 4:43:54 PM Signed: 9/10/2021 4:44:18 PM
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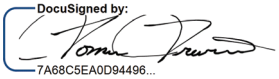
Tomas Trevino tomas.trevino@txdot.gov El Paso District Engineer Texas Department of Transportation Security Level: Email, Account Authentication (None)	DocuSigned by:  7A68C5EA0D94496... Signature Adoption: Drawn on Device Using IP Address: 204.64.21.251	Sent: 9/10/2021 4:04:55 PM Viewed: 9/10/2021 6:32:05 PM Signed: 9/10/2021 6:32:27 PM
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Required hardware and software

Operating Systems:	Windows2000? or WindowsXP?
Browsers (for SENDERS):	Internet Explorer 6.0? or above
Browsers (for SIGNERS):	Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)
Email:	Access to a valid email account
Screen Resolution:	800 x 600 minimum
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** These minimum requirements are subject to change. If these requirements change, we will provide you with an email message at the email address we have on file for you at that time providing you with the revised hardware and software requirements, at which time you will have the right to withdraw your consent.

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